

THE IRON AGE

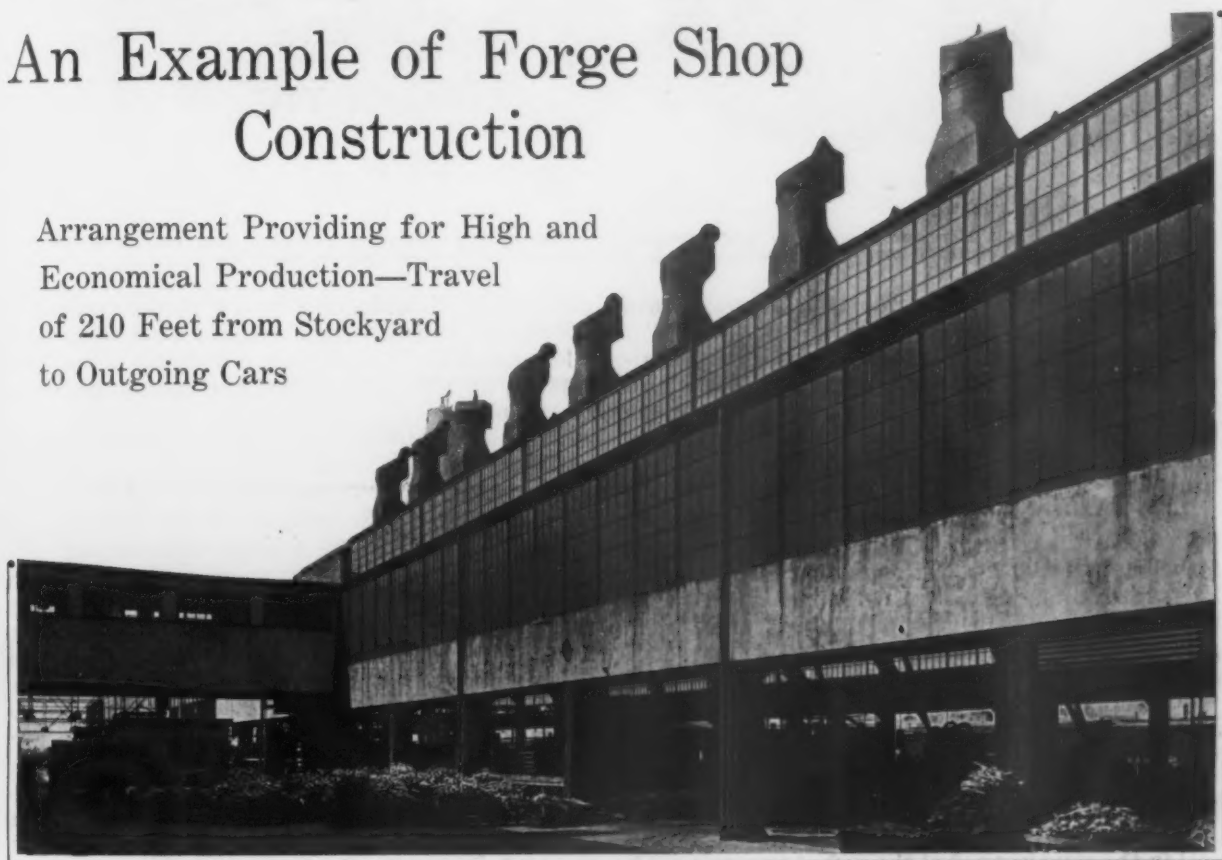
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An Example of Forge Shop Construction

Arrangement Providing for High and Economical Production—Travel of 210 Feet from Stockyard to Outgoing Cars



AN important feature of the new drop forge plant of the Central Forge Co., Detroit, Mich., is the general arrangement of the buildings and equipment, which give minimum distances in the straight-line routing of material during the manufacturing processes. Movements of material in the process of manufacture are crosswise through the shops. The layout is arranged so that extensions can be made without disturbing in any way the plan of routing.

The plant is designed for high production and continuous operation. Stock passes in a straight line from the steel yard to the shears, to the steam forge shop, cooling dock, heat treating department, straightening machines and inspection, and the finished forgings pass on to the loading platform. When the forging bars are sheared the stock is placed on racks supported on legs that are moved with elevating platform storage battery trucks, on which the material is moved to the hammers and to other points for succeeding operations, being placed back on the racks after each operation, eliminating handling by hand and wheelbarrows. The arrangement of the steam and air lines and the lubricating and fuel-oil systems are features that are said to have resulted in high efficiency.

Plant Erected in 105 Days

The Central Forge Co. is a division of the General Motors Corporation, and the plant, which was placed in operation Oct. 10, 1918, being erected in

The Board Hammer Shop, Cooling Dock and One of the Overhead Connections Between Two Buildings of the Central Forge Co., Detroit. This illustrates the general character of the buildings and the open space provided on all sides by the use of rolling doors

105 working days, supplies forgings for the various automobile plants of that corporation. Its daily output of finished forgings has exceeded 50 tons, but there will be capacity for 85 tons with extensions that are now nearing completion. The product includes crankshafts, connecting rods, gears, camshafts, and various small forgings. Axle forgings will be added shortly. The general layout of the plant was made by A. A. Motherwell, general manager of the company, who for years has occupied a conspicuous position in the drop-forge industry, and his plans were carried out in detail by the designers, Smith, Hinchman & Grylls, architects and engineers, Detroit.

There are three main buildings. A steam forge shop occupies a building 70 x 600 ft., and in a parallel building of the same dimensions is a board hammer shop and heat treating department. At the front end of these two buildings is a die shop, 96 x 192 ft. The two forge buildings are separated by a 40-ft. areaway that is used for a cooling dock and driveway. Two of the bays of the die shop building, or 48 ft. at one end, are partitioned off for offices, lavatories, lockers and shower baths, and in front of this section the erection of a two-story office building, 48 x 48 ft., is planned. A 32-ft. areaway separates the die shop and office from



Interior of the Board Hammer Shop. The cold trimming presses, 16 in number, are located in two rows in the center of this shop, which contains 16 board hammers of 800 to 1200 lb. capacity

the other two buildings. The two areaways have 8-in. concrete floors.

The forge and heat treating shops of the original plant were 300 ft. long, but these have been doubled in length, and forge equipment is now being placed in the extensions. Further extensions are contemplated to make each building 900 ft. long.

Adjoining the steam forge shop is a steel yard 80 x 600 ft., served by a 5-ton Milwaukee electric traveling crane with a 75-ft. span, the runway being 25 ft. above the yard level. Another crane of the same capacity will be installed. The inner crane girder is supported on the columns of the forge shop. Two railroad sidings extend the length of the steel yard, one on each side of the outer crane girder. Cars are unloaded from the inner track under the crane, the outer track being used for the storage of loaded and empty cars. The crane is equipped with a lifting magnet for unloading steel and with a clam-shell bucket for unloading coal in the storage yard at the end of the steel yard. The present boiler room occupies two bays at the corner of the forge shop, adjoining this storage yard.

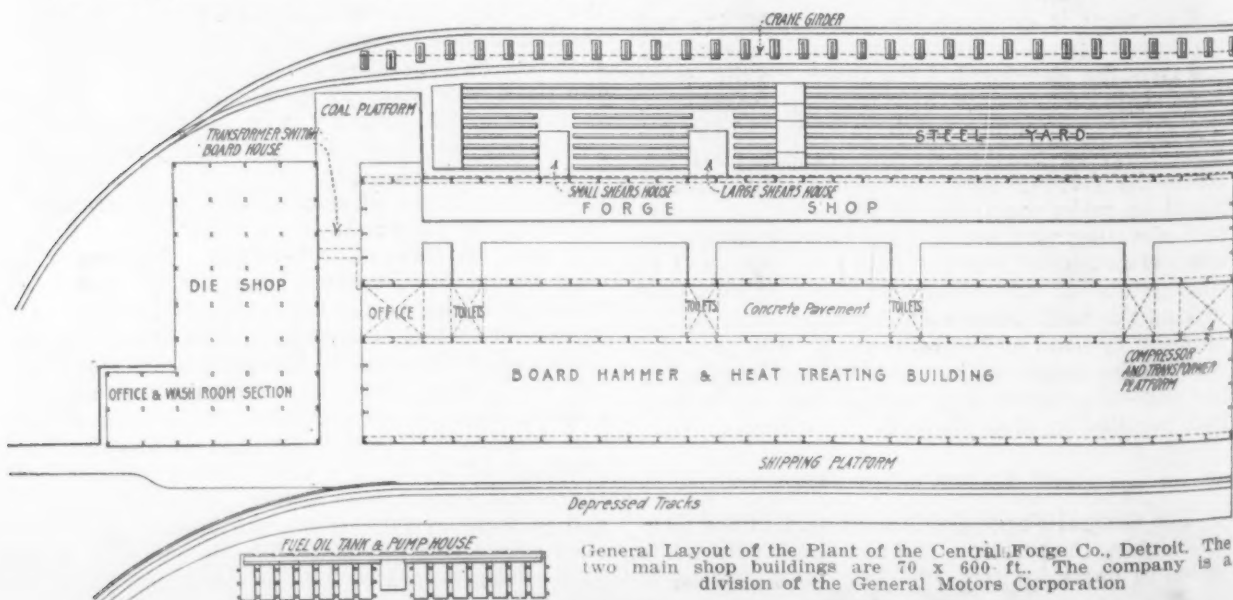
Two shear houses adjoin the forge shop in the steel yard. These are equipped with two Cleveland guillotine-type bar shears with a 6-in. capacity and two Canton alligator shears. Several concrete bins are provided in the steel yard for the storage of heavy scrap, flashings, scale, etc.

On the opposite side of the plant is a shipping

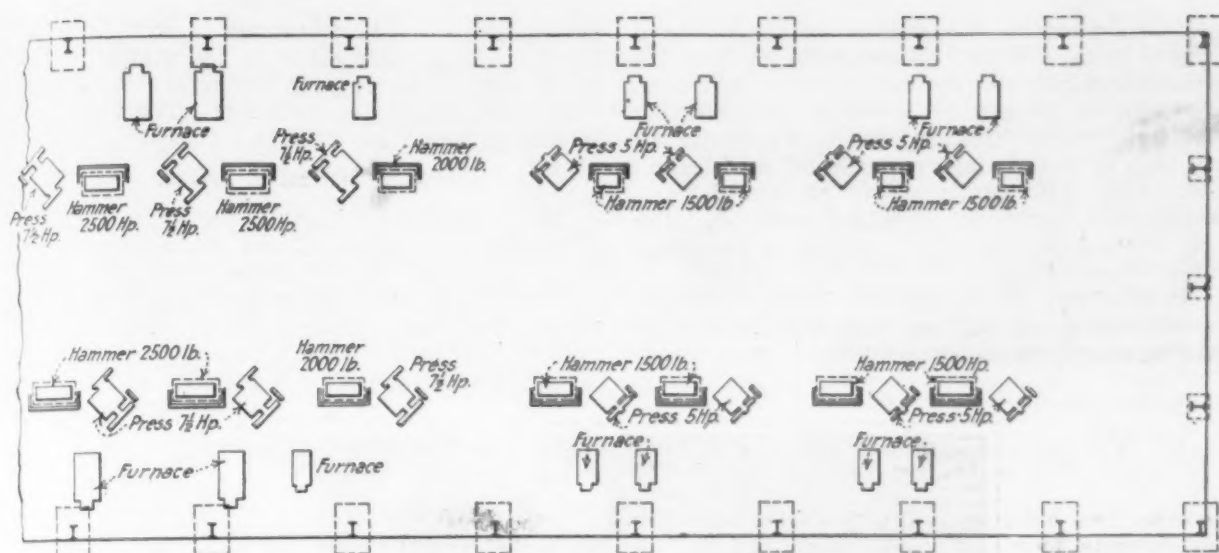
platform 30 ft. wide, on a level with the forge shop floors, and covered with a creosote wood block floor. Alongside this is a depressed railroad siding for loading, the platform and track extending the length of the plant.

The steam forge shop and the board hammer and heat treating shops are generally similar in construction. The frames are built of 24-in. columns on 20 ft. 1½ in. centers. Both have standard type monitor roofs with gypsum block roofing. The steam forge shop is 37 ft. high to its roof truss and 63 ft. high to its peak, and the other shop 24 ft. high to the roof truss and 50 ft. to the peak. Between all the building columns on the four sides of each shop are Kinnear rolling doors 20 ft. wide, with a clear height of 10 ft., so that space is entirely open through the two shops all the way from the stockyard to the loading dock. The rolling doors are supported by trusses between the columns. This section, occupying a space 5 ft. wide, is filled in with cement plaster on metal lath. The truss also supports the bottom of the sash above. Continuous glass surface is provided above the 5 ft. of plaster up to the roof truss. The sash is fitted with factory ribbed glass. Above the areaway are four sections connecting the two buildings that are used for toilet rooms for both shops. These are of steel and concrete construction, being supported on the building columns, and the floors are 15 ft. above the areaway, leaving a clear passage beneath.

Each building is equipped with sixty 72-in.



General Layout of the Plant of the Central Forge Co., Detroit. The two main shop buildings are 70 x 600 ft. The company is a division of the General Motors Corporation



Manner in Which the Equipment Is Installed in the Steam Forge Shop. The 17 steam drop hammers range from 1500 to 12,000 lb. capacity. The presses are at an angle to make work easier for the men.

Swartwout ventilators, that provide a displacement of 10,200 cu. ft. of air every two minutes. One of the photographs taken in the areaway between the forge shops shows the exterior of the board hammer shop, and illustrates the general type of construction. One of the toilet rooms connecting the two buildings appears in this illustration.

The steam forge shop is served by a 10-ton Milwaukee crane for changing piston rods, handling dies, etc., and the board hammer shop by a 5-ton crane. The extensions will necessitate the installation of additional cranes. Automatic Transportation Co.'s storage battery trucks are used in the handling of material on the floor. The steam forge shop has an 8-in. concrete floor, except around the hammers where the hot metal falls. Here firebrick is used. The board hammer and heat treating shop has a firebrick floor laid on a 6-in. concrete slab.

Equipment of Forge Shop

The forge shop equipment includes 17 steam drop hammers of from 1500 to 12,000 lb. capacity, built by the Morgan Engineering Co., Toledo trimming presses with individual drive by 5 to 25-hp.

motors, and Ferguson furnaces. Twenty-three additional hammers of the same range of capacity and the requisite press and furnace equipment will be installed in the extension. The furnaces are along the outer walls, and the hammers are 18 ft. back from the walls, there being an 8-ft. space from a line at the front of the furnace to the center of the hammer. The presses are in line with the hammers. These will all be set at an angle of 22 deg. with a view of making the work easier for the men, although only a part of them are in that position at present.

The board hammer shop is equipped with 16 Billings & Spencer board hammers with a capacity of 800 to 1200 lb. and 16 trimming presses. The furnaces of the Ferguson type are located along the walls, and the Toledo trimming presses are in two rows in the center of the shop, one row serving the hammers on each side. Each hammer is driven by a 75-hp. motor.

Complete equipment for heat treating and finishing forgings is provided in this department. From the hammers the work passes to the cold trimming presses, and from there to tumbling barrels and grinders, to final inspection and to the ship-



View Down the Center of the Steam Hammer Shop. To present equipment will be added 23 new hammers, with necessary presses and furnaces.

ping dock where the forgings are accumulated and shipped in carload lots. Crankshafts go from the presses to double-end Hendey centering machines, and then to Metalwood hydraulic straightening presses, of which there are three of 5-ton capacity, and then after indexing are ready for final inspection. Grinding operations are performed on a battery of motor-driven grinding machines. The heat treating department is located at the lower end of the building.

In this shop are Williams & White bulldozers for stretching and padding axles and for various bending operations, a 5-in. double-gear Ajax upsetting machine, and a 4-in. National upsetting machine, all served by Ferguson furnaces, and Ajax hot saws for cutting off the gate ends. Additional equipment to be installed in the extension to this shop will include three Billings & Spencer board drop hammers of 1000 to 1200-lb. capacity, four Williams & White board drop hammers with a capacity of 1200 to 1500 lb., a 2 x 3-in. National up-setter, and two 4-in. and two 5-in. Ajax upset-

headers are carried on brackets 16 ft. 5 in. above the floor level. Expansion in the steam lines is taken care of by looping the lines between the columns at stations on each side. The method of looping is shown in one of the illustrations.

Unique Lubricating System

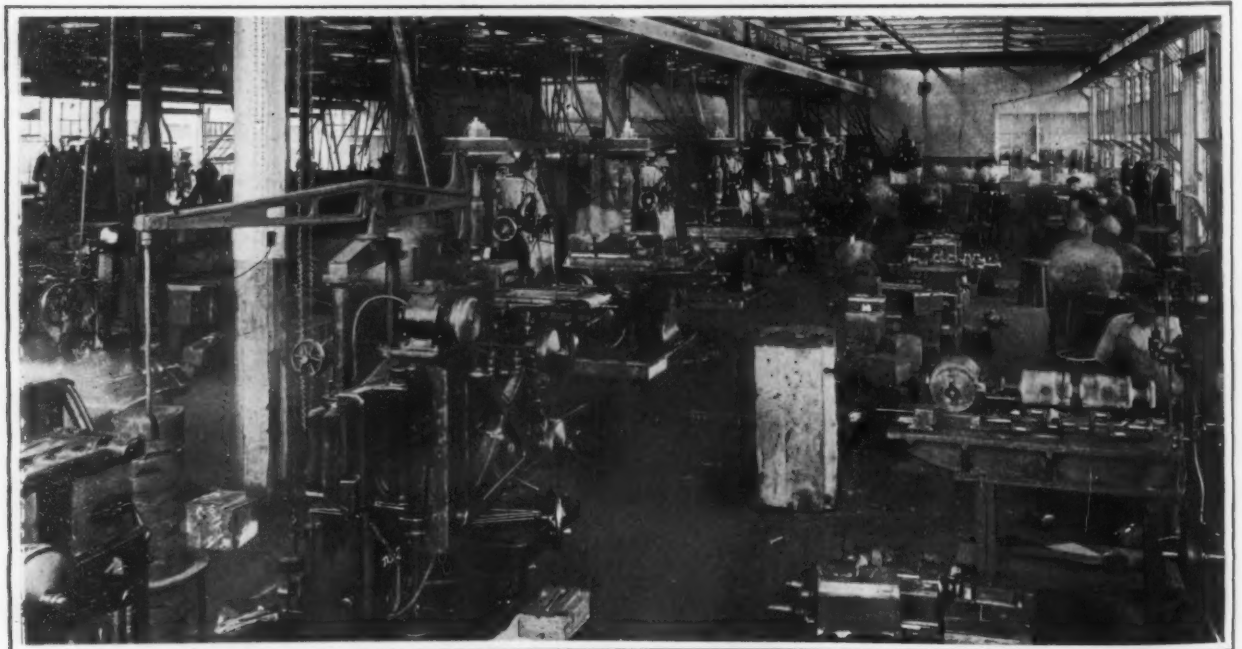
The lubricating system for the steam hammers is unique. It consists of two Richardson-Phenix 20-ft. lubricators located near the boilers, each lubricator being provided with a steam-driven cylinder. Each has a heating coil and an automatic float valve to keep it filled with oil when connected to an overhead reservoir. A pressure release valve

is located in each feed. The pressure valve and atomizing quill are located 5 ft. from each cylinder. It is stated that the system has resulted in a great saving of oil. In the shop extension there will be installed two 26-feed lubricators with steam-driven cylinders mounted on a concrete base.

The method of distributing air through the two shops is of considerable interest.



Showing the Location of the Steam Lines That Extend Around the Steam Forge Shop and the Method of Looping These Lines to Care for Expansion and Contraction. Under the steam lines is the air line



The Die Shop Showing Bay in Which Forging Dies Are Made. A battery of Becker profiling machines is shown at the left. Along the wall at the right are benches

ters, and additional straightening presses and a modern heat treating plant. A hammer with 2000 lb. capacity is being installed for straightening crankshafts after coming from the drawing furnace, taking the place of a straightening press.

The steam hammers are supplied from an 8-in. high pressure header, and the exhaust is carried in a 12-in. exhaust header, each making a loop side by side around the entire steam forge shop. Both

Each building has an air loop 20 in. in diameter, extending entirely around the building. The air line is made of 14-gage welded sheet steel with a flange joint. The main air supply header is 36 in. in diameter. In the steam forge shop the air line is carried on brackets underneath the steam lines, and in the board hammer shop on brackets 13 ft. above the floor. The two loops are connected at three points in order to insure an evenness of pressure. The

advantages claimed for the loop system are that smaller main ducts are used than would otherwise be required, equal pressure is provided, and loss is eliminated. Gates are provided so that the air can be turned off in any section of the shops. Air at 1-lb. pressure is supplied by four General Electric centrifugal compressors, each with a capacity of 7200 cu. ft., and each driven by a 50-hp. motor. Two compressors are located at each end of the plant.

Eliminating Impurities from Fuel Oil

Fuel oil is stored in 14 tanks, each 10 ft. 6 in. in diameter and 31 ft. long, mounted on a concrete saddle 3 ft. above the ground. Each tank is equipped with a heating coil, float valve and gage. Oil is pumped or siphoned from tank cars into a concrete settling tank with a capacity of 16,000 gal., located under the pump house. After remaining in the settling tank 12 hr. the oil is drawn into the storage tanks, leaving the heavy oil and dirt in the bottom of the settling tank, which is then flushed out. By this method the oil is kept clean and the danger of burners becoming clogged with dirt or other foreign matter is eliminated. So far no trouble has been experienced with the impurities in the oil.

From the storage tank the oil for the furnaces is pumped into pipes that run through a concrete trench located around the two shops just inside the building columns and back of the furnaces. These trenches are 2 ft. 6 in. wide and the same depth, and have cast iron covers. The oil is carried in a 4-in. main and in 1½-in. distributing loops to both buildings. The oil line has a return to the settling tank. The total length of the system is 2000 ft. The Bowser system is used for the circulation of oil. A live steam line is carried in the trench to keep the oil warm in winter.

The pump house is equipped with three Viking centrifugal pumps, each with a capacity of 50 gal. per min., and each driven by a 2½-hp. motor. The pumps are so interconnected that each may be operated independently or all together.

The boiler room is equipped with three Wickes 400-hp. water tube boilers, fired by Jones underfeed stokers. These supply steam for the steam hammers in the portion of the plant that is now operated. The exhaust steam is used for heating purposes throughout the plant, a vacuum heating system being provided. A new central power plant is now being built a short distance away. This will be equipped with five 1000-hp. Sterling boilers, automatic stokers and complete coal and ash handling equipment. In addition to supplying steam for the forge shop hammers, this will furnish steam for heating other general motors plants that will be grouped on a large factory site. The new power house will have a 225-ft. brick stack.

The die shop has a steel frame, monitor roof, and continuous window in steel sash from 3 ft. above the floor up to the roof trusses. It is provided with the latest types of sinking and profiling machines. The shop is divided into four bays, the first of which is devoted to the manufacture of forging dies, and contains profiling and die sinking machines and finishing benches. Raw material and finished dies are stored in the second bay. The third and fourth bays are used for making trimming dies, and are equipped with 24 to 36-in. planers, surface grinders, lathes, shapers, die sinking machines and cold saws. In the manufacture of dies the Becker Milling Machine Co.'s profiling machines, Jackson Machine Tool Co.'s typeless die sinking machines, and Keller Mechanical Engrav-

ing Co.'s machines are used. Group drive from 40-hp. motors is provided for much of the machinery, but the die sinking machines and planers have individual motor drive. The two outer bays are served by two Palmer-Bee hand power cranes that span each bay.

The electrical equipment includes three 150-kva. transformers for power and one 75-kva. transformer for lighting. In the enlarged plant there will be added three 400-kva. and one 300-kva. transformer for power, and one 75-kva. transformer for the lighting circuit.

Uncertainty as to Freight Rates—Roads Not Buying Rails

WASHINGTON, July 22.—Despite the continuance of the monthly deficit record of the Railroad Administration, Director General Hines says it is still too early to determine whether the industries of the country must carry another increase in freight rates. He declares that it is impossible completely to segregate the figures of the various railroads in a way that will reveal just how much deficit is attributable to an actual decrease in the usual volume of business and how much is due to the disparity between the increase in rates and the increases in the costs of labor and supplies.

Commissioner E. E. Clark of the Interstate Commerce Commission, who testified before the House Committee on Interstate Commerce concerning the railroad problem, had no doubts about the future. He said another raise in freight rates was imperative whether the roads remained under Government control or were turned back to their private owners. He did not believe that wages would be reduced, nor did he think that the economies which might result from private control would be enough to save the country from higher rates.

The May figures show that the operating expenses in May increased 24.5 per cent over those of May, 1918. Rates were approximately 25 per cent higher. The operating revenues, however, increased only 9.8 per cent. The total traffic as expressed in ton-miles and passenger-miles has fallen off approximately 12 per cent. The falling off in freight traffic alone amounted to 13.5 per cent.

Director General Hines denied reports that the Railroad Administration is about to enter the steel market for more rails. He says that so far no estimates have been made up as to immediate needs, nor has there been any effort to sound out the steel mills on possible prices. Apparently he is waiting until Congress has come a little nearer a decision concerning the future of the roads.

Ten Italian steamers are loading 64,000 tons of steel at New York, besides 10,000 tons of general cargo, according to the weekly report of the Railroad Administration on the export freight situation. A number of British ships, which were in need of coarse freight to be used as density cargo, are moving automobiles overseas.

Southern Furnaces to Resume

The Matthew Addy Co., Cincinnati, says in its comment on the pig-iron market: "The fact that Northern furnaces are beginning to fill up their order books makes it easier sailing for the South. Several Southern interests, whose furnaces have been out of blast for some time, are preparing to go in, but are staying out of the market for the present, as they expect to get higher prices in the near future."

The Trackless Train is the title of a very attractive pamphlet which has been issued by the Mercury Mfg. Co., Chicago. Instead of concentrating on specifications and mechanical details, it treats entirely of method, and instead of being issued as a catalog of the Mercury tractor, it is issued under the name of the system of the company.

COSTS IN ENGLAND

Consul General Hollis's Reports on Advances in Material and Wages

WASHINGTON, July 22—Conditions which have caused steel and iron costs in Great Britain to advance two or three times over their pre-war levels are described in a report received by the Department of Commerce from Consul General W. Stanley Hollis at London.

"The increase in the price of coal to the railways and steamships in Great Britain," reports Consul General Stanley, "is causing freight rates on all raw materials to be still further enhanced; the prices of all raw materials are also increased and, owing to the general rise in the cost of living, the costs of labor have been greatly advanced. Thus the prices to the manufacturer of fuels, raw materials, transportation and labor are very much greater to-day than in pre-war times.

"As present British home prices are largely in excess of those quoted by American and in some cases by the more enterprising French houses, Sheffield manufacturers hesitate to commit themselves to any forecast as to the effect of further advances in fuel costs. Responsible steel makers declare that if foreign products are to be admitted tariff free while British goods are offered at uneconomic values, the steel trade will be badly hit. What the new addition to the coal miners' wages will mean to local industry depends on the extent to which collieries advance prices to recoup themselves for the extra labor cost of basic material, electric power, liquid fuel, and, in fact, the cost of every service in which coal is consumed to any material extent. In other words, the immediate increase which will result from the advance in miners' wages will be only one of the factors which will cause steel prices to advance.

"The increased cost of coal since 1914 alone has already added from \$5.60 to \$5.84 per ton to the cost of steel, which in the majority of cases a great deal more than constituted the whole of the profit on steel in pre-war times. Inquiries show it is not unlikely that pit-head charges will advance \$0.85 to \$1.09. The bare manufacturing cost, apart from the extra work cost, would be from \$2.12 to \$2.73 per ton of steel; while in the case of higher class steels, involving a larger expenditure of fuel, the cost would be proportionately higher.

"Largely owing to increased fuel costs, base materials and finished goods have advanced to two or three times their pre-war values. Thus tramway rails, to

take a concrete example, have risen from \$31.62 to \$94.87, although in no case has the price of coal advanced more than \$2.55 per ton. The accompanying tables give comparisons of pre-war and current values of all the various classes of fuel, steel, and iron.

Materials	1914	1919
Manufacturing Fuels—		
Best steam hards	\$2.92-\$3.18	\$5.46-\$5.71
Cobbles	2.79- 3.04	5.34- 5.59
Best slacks	1.82- 2.06	4.38- 4.62
Steel Billets—		
Acid:		
Bessemer	34.06	80.90
Siemens	36.49	82.73
Basic:		
Hard	29.19	70.56
Soft	24.33	72.99
Common and Finished Iron—		
Hematites:		
West Coast	17.87	45.12
East Coast	16.59	43.49
Foundry:		
Lincolnshire	13.29	37.16
Derbyshire	13.38	36.49
Forge:		
Lincolnshire	13.05	36.49
Derbyshire	12.40	35.88
Bars	35.27	102.19

"The war-time demand for steel was so great that all impediments in the way of manufacture had to be removed, cost what they might. Previous to the war, steel helmets were unknown, but a sudden demand sprung up when they were found to be a means of saving life. Therefore they had to be produced, no matter what the expense.

"Steel sheets or piling, for shoring and cribbing in the trenches, had to be made in enormous quantities, and this particular line of manufacture was largely taken up by the South Wales tin plate manufacturers, who, obtaining large prices from the Government for their product, were largely obliged to increase the wages of their operatives. Now that the manufacture of tin plate has been resumed, the workmen demand the same high wages, with the result that the cost to the consumer of an ordinary 100-lb. box of 120 sheets of 20 by 14 in. common tin plate, which before the war cost only \$3.16, now costs from \$7.77 to \$8.74 per case. As tin is used almost entirely as a container of preserved foods, as well as for the manufacture of a large range of domestic and other utensils, the prices of all these commodities have been largely increased in consequence.

"This week it has been announced in the daily press that, on account of the high prices of ordinary Welsh tin plate, orders for considerable quantities of American tin plate have been taken from large consumers in Great Britain, and that American tin plates have also been sold for the first time in continental countries."

Second Pacific Cable Proposed

An effort is being made by companies with trade interests in the Orient to have a second Pacific cable laid. The present facilities, according to Pacific coast delegates to the sixth National Foreign Trade Council convention, held in Chicago last April, are wholly inadequate to the demands of the increased business, during and since the war. Big interests in the United States and Scandinavian countries are also projecting a cable to be laid between New York and Sweden, probably ending in Gothenburg.

The present Pacific cable from San Francisco passes through Honolulu and Guam to Yokohama and northward to Shanghai. During the war the burden on this single cable was tremendous, owing to the censorship regulations, necessitating the use of the English language and prohibiting codes, both standard and private. Besides the additional business due to the war, Government communications were given priority. The average time for a message from San Francisco to Yokohama or Shanghai is now about four days.

The congested conditions of the Atlantic cables, as well as the increased trade with Norway, Finland and Russia, are responsible to a great extent for the proposition to lay the new cable to Sweden. A northern route of communication has been needed for some time.

A committee on foreign communication has been appointed by the National Foreign Trade Council to

investigate conditions and urge the present Pacific cable company to expand the facilities. The cable cost in the neighborhood of \$8,000,000, and business interests both on the Pacific coast and in New York are of the opinion that a second cable would soon pay for itself, with the increased trade in the Far East. The Committee on Foreign Communication, consisting of two Western members and five from the East, follows: Chairman, E. P. Thomas, president, United States Steel Products Co.; R. P. Tinsley, vice president, American International Corporation; M. A. Oudin, vice-president, International General Electric Co.; R. H. Patchin, manager, foreign trade, W. R. Grace & Co.; Fred J. Coster, president, California Barrel Co., San Francisco; William Pigott, Seattle, Wash.; Howard E. Cole, Standard Oil Co.

The District Salvage Board of the Ordnance Department of Bridgeport, Conn., is issuing a weekly bulletin containing a list of all Government property within the Bridgeport district available for sale, including buildings, building equipment, power equipment, materials, factory supplies, tools and machinery. The bulletins may be obtained from the chairman of the board, Major E. T. Walsh.

The Sierra Electric Co., San Francisco, Cal., has been appointed Pacific Coast distributor for the Chicago Solder Co.

Characteristics of Rifle-Barrel Steel

Metallography and Heat Treatment—Best Structure for the Best Results—Rolled and Heat-Treated Barrels—Factors in Erosion

TWO important papers on rifle barrel steel are to be presented at the Chicago meeting in September of the American Institute of Mining and Metallurgical Engineers. The object is to promote a discussion which may lead to an explanation of some of the traditional beliefs on this subject, on which there exists a wide difference of opinion. The "Metallography of Rifle-Barrel Steel" is discussed by G. F. Butterworth, metallographer, U. S. Armory, Springfield, Mass., and "Erosion Tests of Rifle Barrels" is treated by A. E. Bellis, major, Ordnance Department, United States Army. Abstracts of the two papers follow:

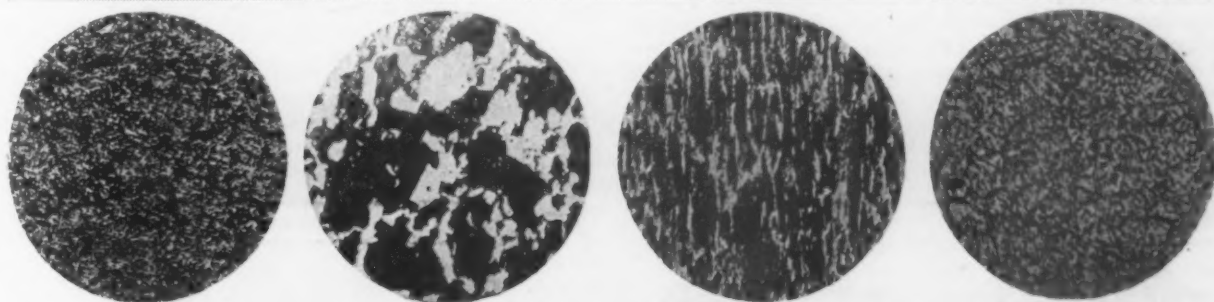
Metallography of Rifle Steel

THE metallographic structures most frequently encountered in rifle barrels, and which are illustrated by the accompanying photomicrographs, fall naturally into two groups, distinguished by the method used to produce in the stock a physical condition having the requisite properties. The first group consists

deg. C.). Barrels rolled within this temperature range give an exceedingly fine grain, shown in Fig. 1. In fact, the grains may be so fine that, at a low magnification, they may be confused with the heat-treated structure discussed below, Fig. 6. A magnification of 500 diameters, however, will always resolve a rolled barrel into the characteristic structure, shown in Fig. 2. As the temperature is increased, the grains are found to be larger. If, on the other hand, the rolling temperature is below the critical range, the structure previous to rolling will not be obliterated, the only effect of rolling being to elongate the coarse sorbite grains in the direction of rolling, Fig. 3. This distortion is greatest at the muzzle.

Structure of Heat-Treated Barrels

Heat-treated barrels are quenched in oil from above the critical range, which should give a martensitic structure, Fig. 4, but the presence of some troostite in the martensite is frequently noted when the quench has not been sufficiently drastic, Fig. 5. The structure



Figs. 1 and 2 (Left to Right)—Barrel Steel Rolled at 1350 Deg. Fahr., Magnification 100 and 500 Diameters Respectively. Fig. 3—Barrel Steel rolled below the critical range, muzzle end, 100 diameters. Fig. 4—Barrel steel given drastic quench from above critical range, 100 diameters

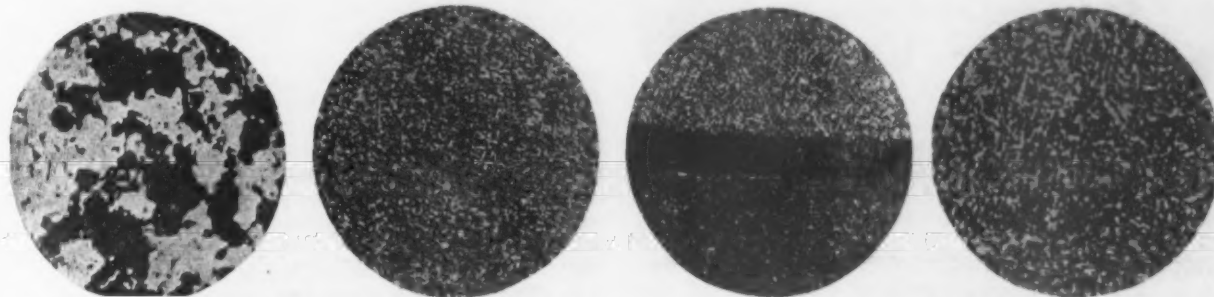


Fig. 5 (Left)—Barrel Steel Given Less Drastic Quench, 100 Diameters. Fig. 6—Barrel steel quenched from 1500 deg. Fahr. and drawn at 1200 deg., 100 diameters. Fig. 7—Barrels quenched from 1500 deg. Fahr. and drawn at 800 deg. (dark) and 1200 deg. (light), 100 diameters. Fig. 8—Barrel quenched from 1500 deg. Fahr. and drawn at 1200 deg., 500 diameters

of rolled barrels, or barrels subjected to hot working by rolling in or near the critical range. In the second group, the stock, which is smaller in diameter than the first, is upset to form the butt end and is then heat-treated by giving it a quench and a draw. These barrels will be referred to as heat-treated barrels.

Structure of Rolled Barrels

The structure of the rolled barrels resembles closely that of the same steel after annealing. There is the same network of excess ferrite outlining the grain boundaries but the grains themselves are composed of sorbite rather than pearlite. The grain size is closely related to the rolling temperature. The critical-point curves of this grade of steel, which is approximately 0.50 to 0.60 per cent of carbon and 1 to 1.30 per cent of manganese, show a single very pronounced point between 1300 and 1350 deg. F. (704 and 732

brought about by the subsequent draw is not so striking, though quite as typical. It is sorbitic or sorbito-pearlitic, and under a low magnification appears almost homogeneous, as in the case of fine grains of pepper and salt well mixed together, Fig. 6. This structure is substantially the same for all drawing temperatures from 800 to 1300 deg. F. (427 to 704 deg. C.), 1200 deg. (648 deg.) being the temperature most frequently used. In fact, it is almost impossible to determine, even roughly, by microscopic examination of its structure, the temperature at which a barrel has been drawn, but it is possible to estimate it within 100 deg. F. by a macroscopic examination.

It has been found that the color of the specimen varies with the drawing temperature, the color becoming lighter as the temperature increases. This is illustrated by Fig. 7, which shows specimens drawn at 800 and 1200 deg. F. (427 to 648 deg. C.) respec-

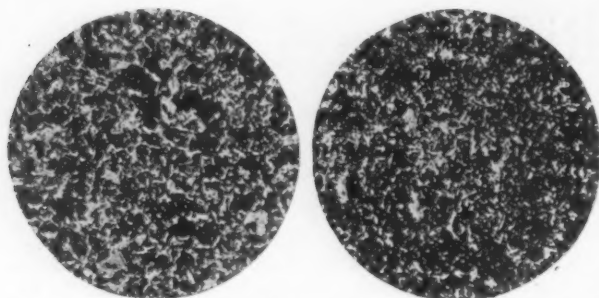


Fig. 9—Barrel Given Ineffective Quench; Structure Near the Bore; 100 Diameters. Fig. 10—Same, with structure near outside, same magnification

tively, photographed side by side. The color contrast is greatest after etching the specimen for 45 sec. in a 5 per cent solution of picric acid in alcohol, or for 6 sec. in a 5 per cent. solution of nitric acid in alcohol. The use of the former is recommended, as it will reduce the effect of the unavoidable differences of time in etching the specimens to be compared. Experiments so far made have shown no variation in color after drawing, due to differences in the original quenching temperature, and the relation of this factor remains to be determined. Under the higher magnification, this heat-treated structure may be resolved into fine light-color seeds in a dark matrix, as shown in Fig. 8.

Detecting Poor Heat Treatment

The following are the most frequent microscopic evidences of defective heat-treatment: If the barrel is quenched before it has been soaked through at a proper temperature, it will show large amounts of excess ferrite collected generally near the grain boundaries. These white areas are more pronounced near the bore than near the outside of the barrel, as appears from a comparison of Figs. 9 and 10. The former shows the structure near the bore, and the latter near the outside of the same barrel. If the drawing temperature is too low, the specimen will appear very dark in a macroscopic comparison with one drawn at the proper

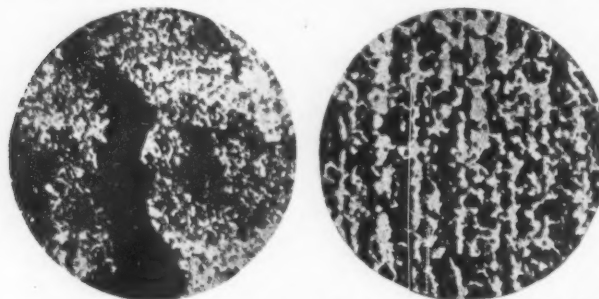


Fig. 11—Steel Burned by Upsetting, 35 Diameters. Fig. 12—Banded structure, 100 diameters

temperature. If the temperature has been too high, but below the critical range, the specimen will be lighter than the standard; and if drawn to or above the critical range, the network of excess ferrite will again appear.

Certain other defects, not due to heat treatment, but which appear in the finished product, are: Barrels are sometimes burned in upsetting the butt end, with the result that the grains, enormously enlarged, are forced apart, leaving dark cracks between, as shown in Fig. 11. A more frequent defect, occurring in both rolled and upset barrels, is the presence of very marked bands in the steel, which the normal heat treatment is unable to obliterate, Fig. 12. Sometimes this structure may be traced directly to a segregation of phosphorus by etching the specimen with Stead's reagent, Fig. 13. The most frequent defect is the presence of slag, appearing in the longitudinal section as strings, Fig. 14. There is always some of this present, but, unless it occurs in abnormal amount or in seams, it appears to have no injurious effect.

Erosion Tests of Barrels

THERE is a wide difference of opinion among rifle experts in the matter of barrel steel, and the relative importance to the life of the barrel of the steel's

composition, heat-treatment, structure, and physical properties. The detailed metallographic study of this steel is given in the paper by Mr. Butterworth. The conclusions from these tests should be capable of wider application than their direct bearing on the barrel-steel problem.

Specifications for Barrel Steel

The Government specifications for barrel steel for model 1903 rifle (Springfield) call for carbon 0.50 to 0.60 per cent., manganese 1.00 to 1.29 per cent., silicon under 0.25 per cent., sulphur under 0.06 per cent., phosphorus under 0.08 per cent. The minimum physical requirements are: Tensile strength, 110,000 lb. per sq. in. (7733 kg. per sq. cm.); yield point, 75,000 lb. per sq. in. (5472 kg. per sq. cm.); elongation, 20 per cent.; reduction of area, 45 per cent. Material fulfilling these requirements gives practically no failures when proof fired, with charge of 70,000 lb. per sq. in.

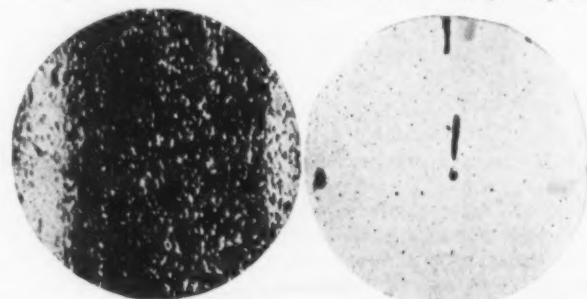


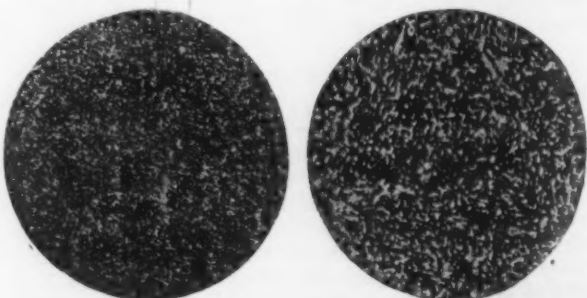
Fig. 13—Phosphorus Segregation Etched with Stead's Reagent, and Fig. 14, Stringy Slag in Longitudinal Section, Both 100 Diameters

pressure, which is 40 per cent. in excess of the service charge. The turning and drilling operations show up any seams or laps that accidentally occur even in the best heats of open-hearth steel, so that faulty stock is practically all eliminated before proof firing.

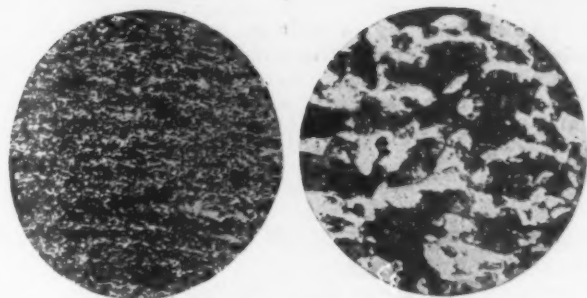
These physical requirements are met either by rolling billets at a proper temperature down to the form of tapered barrel blanks or by heat-treating bars that have been upset to enlarge the breech section. The transformation temperature of this steel, on heating, is around 1350 deg. F. (732 deg. C.), varying somewhat with the composition and the rate of heating. The actual treatment of the barrel blanks, as carried out by different manufacturers, gives four kinds of barrels, which will be called A, B, C, and D, for convenience.

A barrels result from heat-treating upset blanks by quenching at 1500 deg. F. (816 deg. C.) in oil and drawing at 1200 deg. F. (648 deg. C.), which is below the critical temperature for 2 hr. B barrels are made by rolling the steel at or above 1350 deg. F. (732 deg. C.), the critical temperature of the steel. C barrels are made by rolling at 1200 to 1250 deg. F. (648 to 677 deg. C.) or below the critical range. D barrels are made by quenching the billets from 1500 deg. F. (816 deg. C.) in oil and then rolling at 1250 deg. (677 deg. C.). The resulting structure and physical properties are the same as A barrels. This treatment was developed in order to raise the physical properties of B and C barrels that did not fulfill physical requirements.

A and D barrels give a structure of homogeneous sorbite, as shown in Fig. 1. B barrels give homogeneous sorbite but on higher magnification ($\times 500$) small rounded particles of unabsorbed free ferrite are ob-



Photomicrographs of Barrel A, 100 to 500 Diameters Respectively



served, as shown in Fig. 2. *C* barrels generally show evidence of cold work, especially at the muzzle end, in a longitudinal section, as shown in Fig. 3. Large masses of free ferrite are characteristic of this kind of barrel.

Factors in Erosion

The real test of the quality of a barrel is the number of rounds that can be fired without loss of accuracy from excessive erosion. Erosion can be directly measured by the increase in the size of the bore after firing. The extent to which the nature of the steel is a factor in erosion is a much discussed question, one on which every rifle expert has "dope," but one in which there is very little published data based on facts. The importance of accuracy and barrel life, especially in machine-gun barrage work, make it essential that all the metallurgical factors of the problem be appreciated. The subject was brought forcibly to the writer's attention by the metallographic examination of a short-lived barrel showing structure *C*. A barrel giving much longer life, under the same conditions of firing, gave structure *A*. Most of the rifle experts consulted believed that other factors than the structure of the steel were the primary cause of the excessive erosion. It is well known that the dimensions of the bore and chamber, the analysis of the steel, the conditions of firing, particularly with respect to temperature, and the direct temperature effect of the powder, are important factors of erosion.

The following test was therefore planned, in which all these factors were kept constant and careful records kept of the treatment, structure and other metallurgical factors: Three barrel blanks were prepared from the same bar of steel and treated differently so as to give typical *A*, *B*, and *C* barrels. The *A* barrel was heat-treated by quenching from 1500 deg. F., and drawing for 2 hr. at 1200 deg. F. (648 deg. C.). The *B* barrel was rolled at 1350 deg. F. (732 deg. C.); and the *C* barrel was rolled at 1200 deg. F. (648 deg. C.). Physical tests made from blanks given parallel treatment gave the results shown in Table 1.

In the physical tests, the specimen was taken from as near the large end of the barrels as possible. The steel analyzed: Carbon 0.48 per cent., manganese 0.98 per cent., sulphur 0.050 per cent., phosphorus 0.060 per cent. As the minimum amounts of carbon and manganese were present, conclusions reached with this material would be emphasized with higher amounts of these elements.

These barrels were then submitted to a 13,000-round firing test with measurements for accuracy and erosion. The accuracy tests consisted of two targets of 10 rounds each at 500 yd. with muzzle rest and were made after each 2000 rounds from 4000 to 10,000 and then every

Table 1—Results of Physical Tests on *A*, *B*, and *C* Barrels

Yield Point, Lb. per Sq. In.			Tensile Strength, Lb. per Sq. In.		
Barrel A	Barrel B	Barrel C	Barrel A	Barrel B	Barrel C
80,000	71,700	77,000	106,150	116,050	110,750
81,450	70,300	86,900	106,400	114,750	124,550
80,600	71,150	83,550	106,150	116,150	120,950
81,050	70,550	82,650	105,650	114,350	122,800
84,500	70,750	.....	109,450	116,050	.....
Elongation, Per Cent.			Reduction of Area, Per Cent.		
Barrel A	Barrel B	Barrel C	Barrel A	Barrel B	Barrel C
23	25	16.5	59	53	44.9
22	22	20.1	60	53	47.1
24	24	19.6	60	55	47.8
23	23	18.5	59	53	39.4
23	22	....	56	54	....



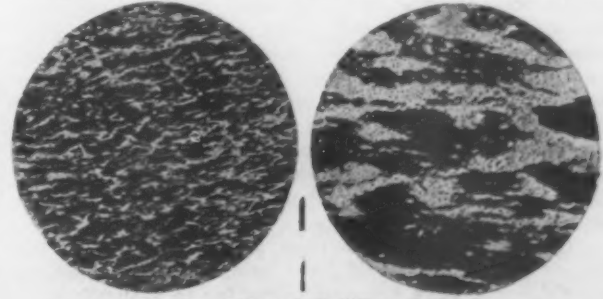
Appearance of Barrels *A*, *B* and *C*, Each Differently Treated, After Firing a Stipulated Number of Rounds

Barrel *A* shot off the target after 12,000 rounds. Barrel *A* had a mechanical defect, viz., a slight pocket about 10 in. from the muzzle, which was discovered when the barrel was sawn lengthwise to expose the bore.

Table 2.—Erosion Table

	(Unit = 0.0001 in.)					
	Barrel A		Barrel B		Barrel C	
	Lands	Grooves	Lands	Grooves	Lands	Grooves
Breach	85	35	90	45	90	78
Muzzle	18	4	20	4	29	6

This experiment shows that the homogeneous structure of a heat-treated barrel (*A* or *D*) offers the best resistance to erosion. The network of free ferrite of



Photomicrographs of Barrel *C*, 100 and 500 Diameters, Respectively

1000 to 13,000. The firing was at the rate of 10 to 12 rounds per minute per rifle, cooling the rifles with water after each 100 rounds. The same lot of ammunition was used throughout the test. The results are summarized in Table 2.

The relative erosion is shown by the increase of diameter of the lands at the muzzle, these being 18, 20, and 29 ten-thousandths of an inch for barrel *A*, *B*, and *C*. Barrel *B* gave a good target (7.3 in. mean radius at 500 yd.) after the 13,000 rounds. Barrel *C* shot off the target after 11,000 rounds.

the C barrel apparently offers easily eroded channels to the washing-out action of the hot gases and metal. The appearance of the section of the barrel confirms this explanation. The uniform structure of the B barrel has better erosion-resisting properties than the C barrel, but not as good as the heat-treated barrel.

[At the meeting in Chicago other papers on this subject are expected. The discussion will probably be participated in by many prominent metallurgists and it is likely that some very valuable data will be made public, some of it results of work held back because of the war.]

CANADIAN CONDITIONS

Many Obstacles in the Way of Business, but Some Bright Spots Appear

TORONTO, July 22.—“As far as the selling of steel in Canada is concerned it has been nothing short of a procession of obstacles since the signing of the armistice. The tonnage that has been placed has been, in spite of conditions, rather than by their assistance.” That is the way the Canadian representative of several American mills sized up the situation for THE IRON AGE to-day.

In many ways he is right. Following the signing of the armistice many of the firms that had been engaged in munitions were tied up for some time waiting for adjustments for canceled contracts. In many cases these have been made. In others the final award has not yet been made. Then came the work of investigation for new lines that would find markets that had previously been served by enemy countries. None of these things did anything for the steel market, nor for the pig iron or scrap market, except to bring forth a number of single-purpose machines for disposal in the latter.

The Matter of Prices

The steel situation in the United States is very quickly reflected in the Canadian markets. The price at Pittsburgh or the price at Cleveland or Buffalo is the price at the Canadian point for the Canadian steel mills, plus freight, duty and exchange. One word tells the whole story of the Canadian trade for the first three months of the year, and that word is “waiting.” Buying was for actual needs. Warehouses did business on hand-to-mouth tactics. They were not going to stock material that was liable to mean a small financial funeral for them later on. Statements were made by several of the leading financiers about this time that were, to state the truth, plainly pessimistic, and their effect was not calculated to help put any confidence into the market.

The announcement of March 21 concerning the prices that had been submitted to the United States Government did something to stabilize the situation here. There was some response in the way of buying, but most of it was for contracts that had been secured, and buying for future use was not done. The investment buyer stayed out, hoping for better prices.

Labor Troubles

But the big trouble was yet to come in the way of labor trouble. Although it did not break until May, there were rumors of the storm some weeks in advance. It was just one more monkey wrench tossed into the wheels, only it happened to be the biggest and most injurious of all. For instance, one American agent had signed a contract to supply material to a firm for the manufacture of automobile rims in Toronto. The work was to be undertaken in a big way. The day after the papers were signed the general strike was declared, and the steel mills did not hold the firm to the contract. The proposition has been abandoned. Boiler shops, marine work, agricultural and automobile makers were hit, especially in the Toronto district. The strike has stopped any chance for much business in structurals for this season, and it may be that there will be men looking for work that would otherwise have been provided, finishing the interiors this winter of buildings where the structural erection had been completed.

One ship and boiler shop stated to-day that the wages their shop would have paid, had there been no strike, would have amounted thus far to \$240,000.

But in spite of all these conditions business is being

placed. Above have been set forth the discouraging features. There is another side. One selling agency representing American firms reported to-day that they had booked an order for 15,000 tons, the largest single order for over a year. Inquiries are good, and a number of them are being converted into orders. Firms that have men on strike are not taking advantage of cancellation clauses in their contracts, and the larger warehousing interests are placing business now for three months, a thing that has not been done for some time past. There is a feeling that prices are not going to recede, and the placing of new orders for Government ships means good business, especially for plates, tubes, etc.

The Canadian Plate Mill

The contract made this week between the Dominion government and the Dominion Steel Corporation is coming in for some criticism. The work of the mill at Sydney, N. S., was stopped because the first price of 4.15c. per lb. was considered too high after the war. As stated in THE IRON AGE last week, the price now agreed upon is 3.65c., and the quantity contracted for is 250,000 tons. Apart from Government work, it is hard to see how plate from this mill can be a commercial competitor. For instance, plate from Pittsburgh can be laid down in Toronto at 2.92½c., plus exchange, whereas the Sydney plate would be 4.20c. Then, again, it is very likely that the Canadian Steel Corporation, a branch of the United States Steel Corporation, will build its own plate mill at Ojibway, across from Detroit. One official of that concern is reported as saying that they intended to go ahead, “no matter if 14 other firms decided to put plate mills in Canada.” The mill will be used not only for Canadian business, but for exporting to other sections of the British Empire under the preferential tariffs.

Merger Is Declared Off

The much-discussed merger between the Dominion Steel Corporation and the Nova Scotia Steel & Coal Co. is off. There have been plenty of rumors of this for weeks past. Boston interests are in control of the Nova Scotia company, and it was said they were very anxious that the deal go through.

Purchase Plant of British Chemical Co., Ltd.

Briggs & Turivas, Chicago and New York, dealers in iron and steel scrap and salvage, have purchased from the Imperial Munitions Board of Canada, the entire plant and property of the British Chemical Co., Ltd., located at Trenton, Ont. A Canadian corporation under the name of Briggs & Turivas of Canada, Ltd., and capitalized at \$1,200,000 has been formed, with main offices in the Canadian Pacific R. R. Building at Toronto, Ont., and a branch office at Trenton, Ont. The property consists of 255 acres and fronts the Trenton River, a navigable stream. Three trunk line railroads enter the plant. The British Chemical Co. was formed and built during the war at an output of approximately \$8,000,000. The equipment consists principally of two separate and complete sulphuric acid chamber plants, sulphuric acid concentrators, a nitric acid plant, an alcohol rectifying plant, two refrigerating plants, a smokeless powder plant, a complete high pressure fire system, two miles of narrow gage track-
age with electric locomotives and trucks, two boiler houses, electrical equipment, warehouses, storage tanks, administration building, etc. The new owners are as yet undecided as to the extent of the operations of the plant for the future, but it is expected that the powder manufacturing apparatus and equipment, and possibly the nitric acid plant, will be dismantled and disposed of, allowing the sulphuric acid plants to stand.

NEW CONTINUOUS FURNACE

Circular Design for Heating Billets from 500 Deg. Fahr. to Wash Heat

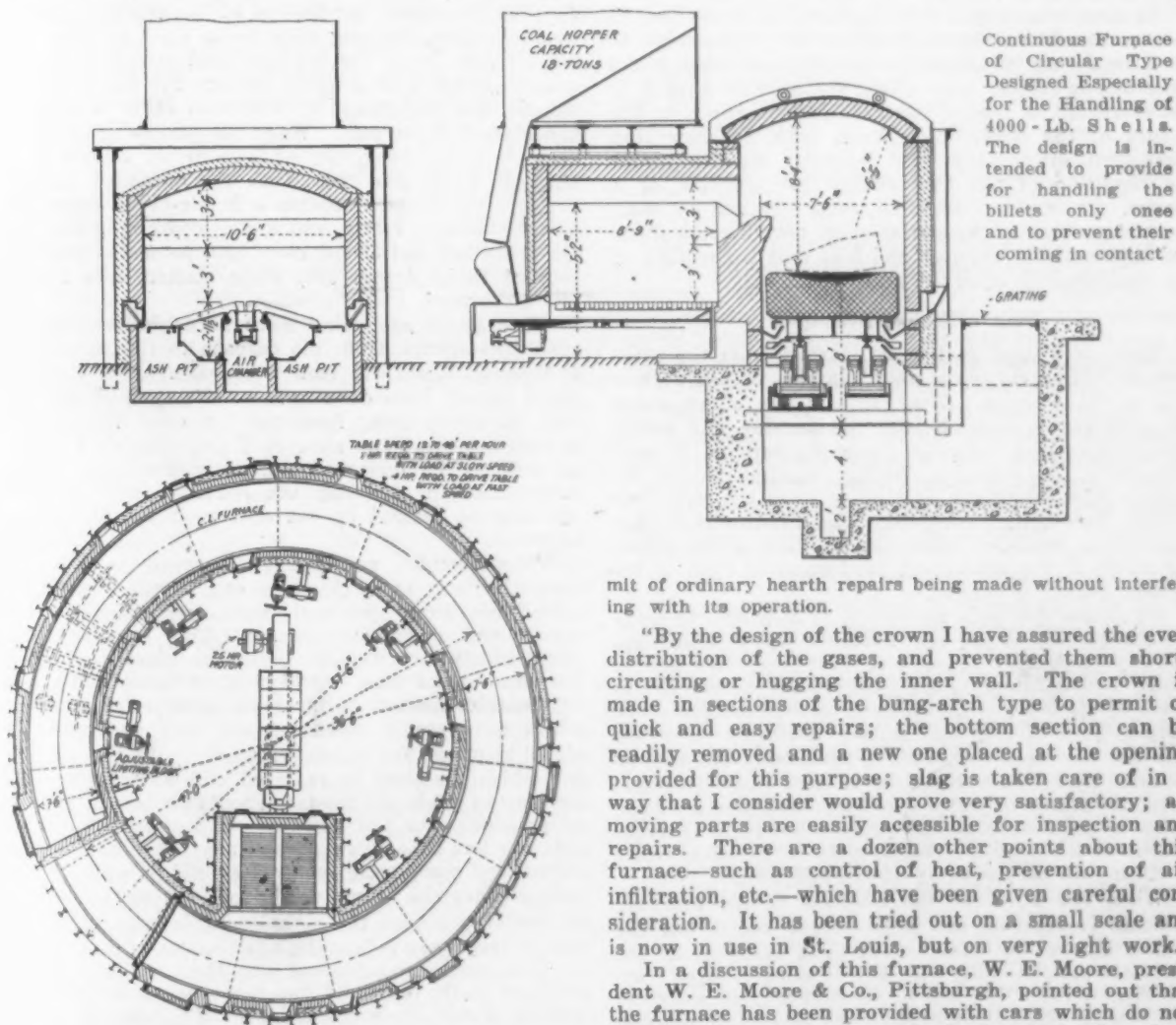
In a paper on the design of heating furnaces from a practical standpoint, recently presented before the Engineers' Society of Western Pennsylvania, George J. Hagan, general manager George J. Hagan Co., Pittsburgh, describes a continuous furnace of his own design for wash heats, so called. The author points out that it is next to an impossibility to run a wash heat in continuous furnaces. Of course, he says, it is possible to do this if the stock is kept separate, but since this requires hand manipulation, everyone who has so far attempted it has always gotten into serious trouble. The instant any of the stock comes in contact when under wash heat temperature, it immediately becomes frozen or welded together.

The author states that at one time he was in a position to observe the operation of a continuous furnace that was to work under wash-heat conditions. "As I expected, it turned out to be a failure in every respect. From that time on I have kept the idea in

tended especially for the handling of the large 4000-lb. shells. This particular shell is of such design that when laid down it tips toward the tapered end. The shell is composed of special alloy steel and should not initially be subjected to a temperature much over 500 deg. Fahr.

"By the use of a furnace of this description a preliminary heating furnace would not be necessary, and only one handling and one type of furnace would be required. A space which has no crown or side walls is provided, so that the bottoms can cool down sufficiently for special alloy steels to be charged thereon, but in ordinary practice where the material can be charged into a heating furnace this space is not necessary. In designing this furnace I have attempted to embody the following features:

1. To secure a continuous furnace where a billet could be charged into a temperature not exceeding 500 deg. Fahr. and gradually brought in contact with increasing temperatures until a wash heat was reached.
2. A furnace into which a billet of special alloy steel could be brought up gradually to a wash heat, handled only once, and not be in any danger of coming in contact with the next billet.
3. A continuous furnace for wash heat that would per-



mit of ordinary hearth repairs being made without interfering with its operation.

"By the design of the crown I have assured the even distribution of the gases, and prevented them short-circuiting or hugging the inner wall. The crown is made in sections of the bung-arch type to permit of quick and easy repairs; the bottom section can be readily removed and a new one placed at the opening provided for this purpose; slag is taken care of in a way that I consider would prove very satisfactory; all moving parts are easily accessible for inspection and repairs. There are a dozen other points about this furnace—such as control of heat, prevention of air infiltration, etc.—which have been given careful consideration. It has been tried out on a small scale and is now in use in St. Louis, but on very light work."

In a discussion of this furnace, W. E. Moore, president W. E. Moore & Co., Pittsburgh, pointed out that the furnace has been provided with cars which do not carry the usual traveling wheels, but have the wheel journals fixed rigidly on the foundations. That design, he said, would probably be an objectionable feature. The segmental trucks on the cars would bump on those wheels and it would be a difficult thing to keep up the sand seals under the cars.

Mr. Hagan replied that the only reason that he recalled for not putting the wheels directly on the cars was the mode of transmitting the power. "You notice," he said, "the outside wheel is without flanges, to take care of expansion. Certain wheels are idlers, the driving shaft going through the walls from the motors on the inside circle of the furnace. I know the question was brought up as to whether we would get more vibration, thus in any manner affecting the seals, but

mind and have tried to get out a real and truly continuous furnace whereby the stock could be kept separated from the time it was charged into the furnace until drawn. Unfortunately I have so far been unable to erect one of these furnaces.

"As you will note in the illustrations, this furnace is nothing more nor less than an ordinary continuous furnace built in a circle. Car type bottom is provided with proper sand seals and the right clearance between side walls, and the necessary provision is made for taking care of any slag. This particular drawing was made to meet the specifications that were put out by the ordnance department of the United States Steel Corporation for the Neville Island plant and was in-

we felt that by properly lining them up we might be able to avoid it. It has not been tried out, and no doubt a lot of problems would develop which would have to be worked out."

The subject of the plus pressure over the moving ring at the stoker end was raised by F. L. Egan, engineer on river equipment Carnegie Steel Co., Pittsburgh. He questioned as to how the sides and ends of the moving blocks were sealed to prevent the hot gases

from passing into the lower compartment. In answer, Mr. Hagan stated that this point had been taken into consideration and a mechanical arrangement was developed so that when the door is opened it automatically controls the air flow to the stoker. In answer to another question, he stated that the blocks themselves were sealed with sand, the dovetail joints between the blocks also being sand sealed, but with just direct contact on the bottom.

Limestone in Acid Open-Hearth Practice

Its Effect in Obtaining Perfect Equilibrium in the Bath
and Less Defective Steel—Relation of Slag and Steel

THE value of limestone in the working of a charge of acid open-hearth steel has been the subject of much controversy recently, says B. Yaneske, Sheffield, England, in a paper, "Deoxidation and the Influence of Lime on Equilibrium in the Acid Open-Hearth Furnace," delivered at the May meeting of the Iron and Steel Institute in London. An abstract follows:

At some steelworks it is the usual practice for the melters to add considerable quantities of limestone to the bath during the oreing period, while at other works limestone is seldom used owing to the view that it is not essential, or that it has an injurious effect on the quality of the steel. Experience tends to show that insufficient attention is paid by some steelmakers to the condition of the slag during the working of a charge. Their object being to make steel and not slag, the composition of the latter does not interest them, and they entirely overlook the fact that the quality of the steel depends upon the state of the slag.

Slag with Metal Samples

There is a good deal to be learned from the practice of taking regularly slag samples in conjunction with metal samples. They explain the effect which the addition of limestone has on the slag and metal, and disclose how valuable limestone can be, if used judiciously, in obtaining perfect equilibrium in the furnace bath, which can only occur when the metal has become thoroughly deoxidized. The attainment of that condition is essential before the addition of the finishing alloys if the subsequent production of steel of the highest quality is desired.

To attain the ends in view it is desirable to work the charge, say 50 per cent hematite pig, in a particular way, especially to melt it down very hot and to insure a satisfactory high temperature before ore is added to the bath, maintaining control by taking spoon samples both of slag and metal. Limestone is added with the ore when the silica is sufficiently reduced, as indicated by the disappearance of holes from the metal samples. Whenever holes reappear, more lime is added, which is preferable to the practice adopted by some melters of lowering the temperature of the bath, either by cutting off the gas or by adding cold scrap.

When the time for the addition of the finishing elements is reached, ore is no longer added, but the bath is allowed to "stew" until holes reappear in the metal samples, showing that SiO_2 is being reduced from the slag a little too much, whereupon just sufficient lime is added cautiously to establish perfect equilibrium between slag and metal. With true equilibrium, or a state of dead melt, the metal samples will be found sound in every detail. The usual finishing additions are now made and the furnace is quickly tapped. A good casting temperature is insured by this method.

When making nickel-chrome steels, nickel-chrome scrap having been charged, the same procedure as described for carbon steels is followed, but darker colored slags are obtained owing to the presence of Cr_2O_3 in the slag.

Effect of Large Amounts of Lime

Limestone is sometimes added in large quantities with a view to decreasing the concentration of FeO in the slag, but any addition beyond that required to satisfy any excess of SiO_2 of the slag results in the

displacement of some FeO from the slag, while if limestone is added incautiously the slag may contain such a high percentage of CaO that it is difficult to get it into such a condition that the SiO_2 begins to be reduced.

The presence of a high percentage of CaO in the slag can always be discerned by an examination of the slag fractures. At the end of the process described by the author, the slag obtained is light green with a sub-vitreous lustre for the quenched sample, and light grayish-green with a stony texture for the air-cooled sample, the percentage of CaO and MgO in the slag being about 5 per cent. When the percentage of these bases is in the proximity of 7 to 10 per cent. and the silica 55 to 58 per cent., both the quenched and air-cooled slag samples assume a bottle-green color with a more vitreous lustre, and a slag containing about 10 per cent. CaO and 55 per cent. SiO_2 possesses the property of being drawn out, while molten, into threads like glass wool.

Threads of such slag have been observed by the author to stretch from the furnace to the water-bosh, a distance of several feet, slag adhering to the test- spoon having been drawn out as the sampler has carried the spoon away from the furnace. Whenever it is observed that the air-cooled slag sample is green as well as the quenched sample, difficulty is usually experienced in obtaining the reduction of SiO_2 from the slag as desired by the author at the end of the process.

When samples are defective owing to excessive lime additions, sound samples can be temporarily obtained by dosing the bath with such deoxidizers as ferrosilicon or silicomanganese. This expedient may give satisfactory results for some classes of steel, but the finished steel would most probably contain an appreciable amount of insoluble silicates as a result, which non-metallic impurities are very undesirable in steels required for special purposes. If the purpose for which the steel is required will allow such additions to be made the furnace should be tapped as soon as possible after the samples are satisfactory, before the slag has time to react, and any other additions of silicon and manganese required should be added to the ladle. Otherwise, it will not be long before the reaction of the slag causes the samples to become almost as bad as they were before the additions were made.

The general conclusions are that, while a highly oxidized bath may not be necessary for ship and similar plates, it is essential in the case of special steels, particularly nickel-chrome; that flaws in manufactured steel, due to the inclusion of silicates, can be avoided by the judicious use of limestone according to his system, and that the oxidation losses from the finishing alloys is reduced to a minimum by this process.

The Jamestown Iron & Metal Co., Inc., Jamestown, N. Y., wholesale dealer in iron, steel, and scrap metals, has purchased a new scrap yard at Nos. 110-112 Steel Street, Jamestown, N. Y. The property is 100 by 220 ft., with a private switch on the Erie Railroad. There is a large warehouse for rags and metals and sheds for shears. Shears and other equipment will be installed. Eli Minsker is president of the company, and Morris M. Minsker, formerly of Buffalo, is secretary and treasurer.

Pittsburgh Basing for Steel Products

Consumers' Complaint Against Chicago District Producers Charges Discrimination Amounting to Agreement "in Order to Maintain Prices"

In THE IRON AGE of July 17 details were given of the hearing before the Federal Trade Commission at Washington on July 9 on the question of basing points for prices of finished steel products. The hearing was informal, the proposal for an investigation of the claims of consumers of steel in Chicago and tributary territory for a Chicago basing price being made by John S. Miller, attorney for the consumers, and by Chairman E. H. Gary, of the Steel Corporation. Attorney Miller was told by the Federal Trade Commission to file an application for a complaint against the steel companies. This he has now done and the text of the application is given below. It is made by the Western Association of Rolled Steel Consumers, an organization consisting of about 850 members. The secretary, W. E. McCollum, 1305 City Hall Square Building, Chicago, states that since the preliminary hearing at Washington on July 9 the list of members has increased by about 50. The association held a meeting at Chicago, July 16, at which the formulated application to the Federal Trade Commission was presented and adopted as the basis of the case which is to come up at Washington.

The investigation which the Federal Trade Commission is expected to make is one of far-reaching consequences to both producers and consumers of steel throughout the country and will prove to be one of the most complicated the commission has undertaken. The text of the Chicago application follows. It is signed by James E. MacMurray, president, and W. E. McCollum, secretary of the association, and by Miller, Starr, Brown, Packard & Peckham, attorneys:

TO THE FEDERAL TRADE COMMISSION, WASHINGTON, D. C.:

The Application by the Western Association of Rolled Steel Consumers for a Complaint Against the United States Steel Corporation, and Its Subsidiary Companies, Hereinafter Named, and the Inland Steel Co. and the Interstate Iron & Steel Co. and the Steel & Tube Co. of America:

The Western Association of Rolled Steel Consumers, a voluntary association, whose address is at room 1305 City Hall Square Building, 139 North Clark Street, Chicago, Ill., respectfully makes application to the Commission to institute a proceeding in respect to the violations of law hereinafter mentioned—over which the Commission has jurisdiction—by the corporations hereinafter named; and for that purpose to issue a complaint directed against the United States Steel Corporation, a corporation organized under the laws of the State of New Jersey, having its principal offices and address at 71 Broadway, in the city of New York, and its subsidiary corporations hereinafter named, and whose respective addresses are at No. 71 Broadway in the city of New York; the Inland Steel Co., whose address is at No. 38 South Dearborn Street, Chicago, Ill., and the Interstate Iron & Steel Co., whose address is at No. 104 South Michigan Avenue, Chicago, Ill., and the Steel & Tube Co. of America, whose address is at No. 111 West Washington Street, Chicago, Ill.—on the grounds of unlawful restraint of trade and of price discrimination, contrary to the provisions of the anti-trust acts, and in particular of section 2 of what is known as the Clayton Act of Oct. 15, 1914; and of unfair competition in trade, contrary to the provisions of section 5 of the Federal Trade Commission Act of Sept. 26, 1914—against the constituent members of the petitioner's association, and to their injury in their business, and against and to the injury of other steel fabricators operating in that portion of the United States that comprises generally the Central, Western, Northwestern and Southwestern States, and their trade and customers and all other consumers of products of rolled steel which are increasingly called for and needed and used in the rapid and growing development of the Middle West and the territory tributary to the Chicago district hereinafter referred to.

Petitioner association is composed of upwards of seven hundred fabricators of steel, engaged in the manufacture and sale in interstate commerce of products of which rolled steel is a constituent part, and operating in the States of Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Kansas, Missouri, Montana, Nebraska, Oklahoma, South Dakota, Texas, Utah,

Washington, Wyoming, Colorado and California, all being tributary to what is known in the trade as the "Chicago district."

The United States Steel Corporation, respondent, through its subsidiary companies, which it owns and controls, among which are the Illinois Steel Co. and the Carnegie Steel Co., and such subsidiary companies under its direction and control, are and have been for a considerable time, engaged in the production and sale in interstate commerce of rolled iron and steel, including plates, shapes, sheets and bars and other products of their rolling mills, having one of their principal producing plants at Gary, Ind., and operating other steel-producing plants at South Chicago, in the city of Chicago and at Joliet, Ill.; Duluth, Minn.; Milwaukee, Wis.; Pittsburgh, Pa., and elsewhere.

Lower Costs at Chicago

That the rolled steel made in the Chicago district by respondent, United States Steel Corporation, through its subsidiary companies, at Chicago and Joliet, Ill., and at Gary, Ind., and by respondents, Inland Steel Co. at Indiana Harbor, Ind., and by the Interstate Iron & Steel Co. at East Chicago, Ind., and the Steel & Tube Co. of America at Indiana Harbor, Ind., is produced at a cost substantially lower than at the Carnegie plant of the United States Steel Corporation at Pittsburgh, Pa., or at other plants at Pittsburgh or at other places east of Gary or elsewhere, and that over one-fifth of the rolled steel made in the United States is made by the respondents at Gary, Ind., which is distant not more than 30 miles by rail from Chicago; at Joliet, which is about 40 miles from Chicago, East Chicago and Indiana Harbor, which are between Chicago and Gary, while Pittsburgh, Pa., is distant from Chicago substantially 500 miles. That among the reasons for the reduced or favorable cost of producing rolled steel at Gary and at Chicago, Joliet, East Chicago and Indiana Harbor as compared with the cost of producing rolled steel at Pittsburgh or elsewhere are the shortness and directness of the all-water transportation of ore from the mines in Minnesota to their mills in the Chicago district and of their proximity to coal.

That Gary, Ind., is already the second largest producing district of rolled iron and steel and is the only large producer of practically the entire line of steel products outside of the Pittsburgh district.

Expansion of Western Consumption

That said very large Gary plant of the United States Steel Corporation was constructed in and from

time to time since the year 1906 and was there constructed and from time to time enlarged in view of its favorable location for the economical production of rolled steel and its proximity to the market of the great consuming territory of the rapidly growing Middle West and territory tributary thereto—in the development of which there has been and will be a rapidly increasing need and demand for iron and steel products, and the establishment in such district and territory of numerous and extensive industries for their fabrication to meet such demand. Applicant is informed and thereon states that the plants of the respondents at Gary, Chicago, Joliet, East Chicago and Indiana Harbor have from time to time been rapidly enlarged and are now in course of further extensive enlargements. In 1917, the year for which the last official statistics are accessible, about 86 per cent of the entire production of iron ore came from the Lake Superior district, while 10 per cent thereof came from the Birmingham district, 2½ per cent from the three States of Pennsylvania, New York and New Jersey, and 1½ per cent from Colorado. That the greatest normal growth and increase in iron and steel production under peace conditions will naturally and normally be in and about Chicago, where the great plants at Gary, Chicago, Joliet, East Chicago and Indiana Harbor are located, by reason of the cheaper cost of production thereof than at other places; and that the principal natural and normal growth and increase of the consumption and demand of iron and steel and their products now is and will be in the Middle West and the territory tributary to the Chicago district.

Basis for Price Fixing

The applicant submits that the normal and reasonable price for rolled steel should be measured by the cost of production, with the addition of a reasonable profit, without the addition of a large and arbitrary increase, which forms no part of the cost of production and is over and above such reasonable profit. The district and territory in which the factories of the members of the applicant association are situated is tributary to the location of the mills at or near Chicago where rolled iron and steel are produced at the lowest cost, and where and to and from which the greatest and the shortest facilities for transportation from mill to consumer are and will continue to be furnished.

The application of the principle of price fixing at cost plus a reasonable profit and of the law of supply and demand requires that the price of rolled steel in the Chicago district should be as low as and not greater than the price at any other point or in any other district in the United States. The fixing of any higher price for rolled steel produced in that district is arbitrary, artificial, unreasonable, and uneconomical, and gives to the respondent producers excessive and unreasonable profits.

It is submitted that if basing points are economically sound, then in the interest of the trade—of consumers and producers and of the districts or sections to be served and affected—their selection should take into view their situation with respect to cost of production, supply and proximity to existing and growing greater demand under normal and natural conditions. In any proper consideration of the question, the applicant maintains that if a basing point or basing points are to be considered as proper and recognized, Chicago best answers all the conditions and should be a basing point.

Powers of Federal Trade Commission

Among the powers of the Commission is the following (under which, it is submitted, the Commission may properly inquire into all the facts, situations and questions bearing upon the issues and questions presented by this applicant):

To gather and compile information concerning, and to investigate, from time to time, the organization, business, conduct, practices, and management of any corporation engaged in commerce, excepting banks and common carriers subject to the act to regulate commerce, and its relation to other corporations and to individuals, associations, and partnerships.

In support of this application your petitioner sets

forth the following facts as constituting the violations of law complained of:

1. That said United States Steel Corporation and its subsidiary company, the Illinois Steel Co., acting under its control and direction, and said the Inland Steel Co. and the Interstate Iron & Steel Co. and the Steel & Tube Co. of America, aforesaid, upon sales in interstate commerce for use, consumption or resale within the United States, are and since on or about the first day of July, 1918, have been charging to the members of the petitioner association and to other purchasers in the States mentioned in paragraph 1 hereof, for rolled steel consisting of iron and steel plates, shapes, sheets and bars and other rolled steel products of their respective mills which are by them rolled and manufactured and delivered at or shipped from their said respective rolling mills situated at Gary, Indiana Harbor and East Chicago, Ind., and Joliet, Ill., at a price which is fixed by adding to the proper price thereof as measured by the cost of productions plus a fair and reasonable profit, the amount of the railroad freight charges or cost of transporting such commodities from Pittsburgh, Pa., to Chicago, or to the destination where they are to be received by the purchasers respectively, less the freight charges from the plants of such producers to such destination, as if such commodities were in fact shipped from Pittsburgh, instead of being shipped from their respective mills at Gary, Indiana Harbor, East Chicago or Joliet, as the fact is.

In other words, the prices of such commodities are increased by large fictitious freight rates which amount to \$5.40 per ton or thereabouts, and which are not incurred or paid and are not any proper element or part of the price of such commodities, but are an arbitrary and excessive and unreasonable addition thereto.

Competition with Fabricators Farther East

2. That many of your complainants, members of the petitioner association, are competitors in business, in interstate commerce, of other fabricators in what is known as the Pittsburgh district or in the States east of Indiana, who have been during the same period and are also purchasers in interstate commerce from respondents of like commodities, and to such competitors the said respondents have been and are selling such commodities at prices substantially less than the said prices by them exacted from and paid by the members of the applicant association as aforesaid.

3. That the respondents during said period have been and are selling such commodities to such competitors at Pittsburgh and in the Pittsburgh district of the complaining members of the applicant association, f.o.b. Pittsburgh, and at prices less by the amounts of the ruling freight charges on like commodities from Pittsburgh to Chicago, or by substantially that sum, than the prices so made to the members of the applicant association or other fabricators or consumers located in the Chicago district, or in the territory tributary thereto—for like commodities produced at Gary, Chicago, Joliet, East Chicago and Indiana Harbor.

4. The respective respondents engaged in interstate commerce, thus, as applicant charges, discriminate in price of such commodities (which commodities are so sold for use, consumption or resale within the United States), in favor of such competitors of the members of the applicant association who are located in the Pittsburgh district or in the territory east of the Chicago district and against the members of the applicant and other consumers of rolled steel products located in the Chicago district or in the territory tributary thereto.

5. That the effect of such discrimination in price is to cause to and impose upon the respective members of the applicant, with respect to sales or attempted sales by them of their products to customers in the Pittsburgh district, or in the territory east of said Chicago district, the great cost or sum amounting to such fictitious freight rate from Pittsburgh to Chicago, in addition to the cost of transportation of their own product from their mills to their customers in the Pittsburgh district or territory east of Indiana and thereby practically to exclude them from such trade in

competition with fabricators located in said Pittsburgh or Eastern district or territory, while but for such discrimination in price, they could and would successfully compete with such Eastern competitors for and receive and enjoy profitable trade in such district east of such Chicago district, particularly in that portion thereof lying nearer or as near to Chicago as to Pittsburgh from which they are now so practically excluded.

Eastern Fabricators Get into Chicago Territory

6. The further effect of such discrimination in price (while so practically excluding complainants, members of the applicant here, from such Eastern market), is to enable and permit their said Eastern competitors (purchasing such commodities from respondents f.o.b. Pittsburgh and at such lower price than members of the applicant can purchase, as aforesaid), to ship and deliver their products to purchasers thereof in the Chicago district, at a cost or expense lower than or practically as low as the members of the applicant can or could ship and deliver their products to such purchasers, and so to compete on equal terms with the members of the applicant association for the trade in the territory of such members.

And so the applicant charges that the fact that such Chicago district fabricators of steel are obliged to pay for rolled steel purchased of the respective respondents and produced at their mills in said Chicago district in accordance with this single Pittsburgh base price—i. e., a price equal to the Pittsburgh price of the commodity plus a sum equal to the freight charge per ton from Pittsburgh to the point of destination (although in fact no such freight charge is actually incurred)—deprives such consumers of rolled steel in the Chicago district from enjoying the advantage to which they are entitled of their proximity to the real producing points at Gary, Ind., and elsewhere in the Chicago district, and arbitrarily and unjustly discriminates against such consumers in said Chicago district, in so excluding them from competing for business with those fabricators who are in or tributary to the Pittsburgh district and the East, and in enabling such Eastern fabricators, at the same time, to compete on unfairly advantageous terms in trade with the fabricators in the Chicago district, as if the plants of such Eastern fabricators were in the Chicago district.

7. The discrimination in price and disadvantage so suffered by the fabricators and consumers of rolled steel in the Chicago district is not a natural one, and is not due to their geographical location or remoteness from adequate mills of supply. Under the play of the natural and normal forces governing supply and demand (which has already led to the development of the steel industry there) and with the removal of the artificial conditions due to such complained of discriminations, the supply in such Chicago district of rolled steel and rolled steel products will accommodate itself to and meet the demand therefor.

8. That such increase in cost of rolled steel increases the cost and selling price of everything involving its use, and not only the fabricators in the Chicago district but their customers, and all who consume or use the products of steel in that section of the country, are wrongfully and prejudicially affected by this compulsory increase in price of the products they purchase caused by such artificial increase in price of rolled steel; and that such discrimination in price is against and unfair and unjust and prejudicial to such territory constituting the Chicago district and the business and trade thereof and in favor of said Pittsburgh or Eastern district.

That this arbitrary increase in price amounts in the case of Chicago contracts at the present time to \$5.40 per ton or thereabouts, even though the rolled steel used in fulfilling orders from the said Chicago district is produced at the mills of the respondents situated at Gary, Indiana Harbor or East Chicago, Ind., or at Chicago or Joliet, Ill.—mills in the Chicago district territory that are controlled by respondents.

Absorbing Freight on Eastward Shipments

9. That to meet the said Pittsburgh base price, the respondents who have mills in the Chicago district

make prices and sell to purchasers in the Pittsburgh district or in territory between the east line of Indiana and Pittsburgh, who are competitors of the members of applicant, at prices of the Pittsburgh mills and themselves absorb the freight rate from their mills to the purchaser's plant and thus discriminate in price to the amount of several dollars per ton in favor of such competitors and against applicant's members.

Different Prices in Chicago District

10. That the respective respondents do not in all cases or uniformly maintain or charge such Pittsburgh base price but have practiced and made and do make other discriminations in price in favor of certain customers in the Chicago district, viz.:

They have quoted and made and do quote and make, as applicant is informed and charges, to and in favor of all or certain agricultural implement manufacturers, and to certain other consumers and purchasers in order to secure orders—prices f.o.b. Chicago or f.o.b. mill for such rolled steel, which is less by said addition of \$5.40 per ton or thereabouts than the prices exacted from the members of the applicant.

They have quoted and made and do quote and make prices to railroad companies for rails, angle-bars, splice bars and tie plates f.o.b. Chicago or Pittsburgh or f.o.b. mill. They quote and sell basic pig iron at the same price f.o.b. Chicago and f.o.b. Pittsburgh.

Applicant submits that such practices besides constituting discriminations in prices show that such price fixing f.o.b. Pittsburgh solely, which is herein complained of, has no trade or economic reasons or basis.

Agreement in Discriminations Alleged

11. That the effect of the discriminations in price aforesaid may be and is to substantially lessen competition and tends to create a monopoly in the said line of commerce.

12. That the said respective discriminations in price between purchasers of such commodities are not on account of differences in the grade, quality or quantity of the commodity sold and do not make only due allowance for difference in the cost of selling or transportation, nor are such discriminations made in good faith to meet competition. But they are made by agreement or understanding amounting to agreement between the respondents or between respondents and other producers of steel in order to maintain prices of rolled steel and particularly to maintain such increased and unreasonable prices in and throughout said Chicago district to the members of the applicant and other consumers therein.

13. The applicant charges and submits that the respective respondents above named—the United States Steel Corporation, the Illinois Steel Co., the Carnegie Steel Co., the Inland Steel Co., the Interstate Iron & Steel Co., and the Steel & Tube Co. of America—in the course of their said commerce, in the acts and respects hereinabove set forth, have discriminated and are discriminating in price between different purchasers of commodities which commodities are sold for use, consumption or resale within the United States, where the effect of such discrimination may be to substantially lessen competition or tend to create a monopoly in the line of commerce hereinbefore mentioned.

14. The applicant further charges and submits that the acts of the respondents above set forth and complained of use, cause, and bring about and constitute unfair methods of competition in commerce, which are declared to be unlawful by section 5 of the said Federal Trade Commission Act.

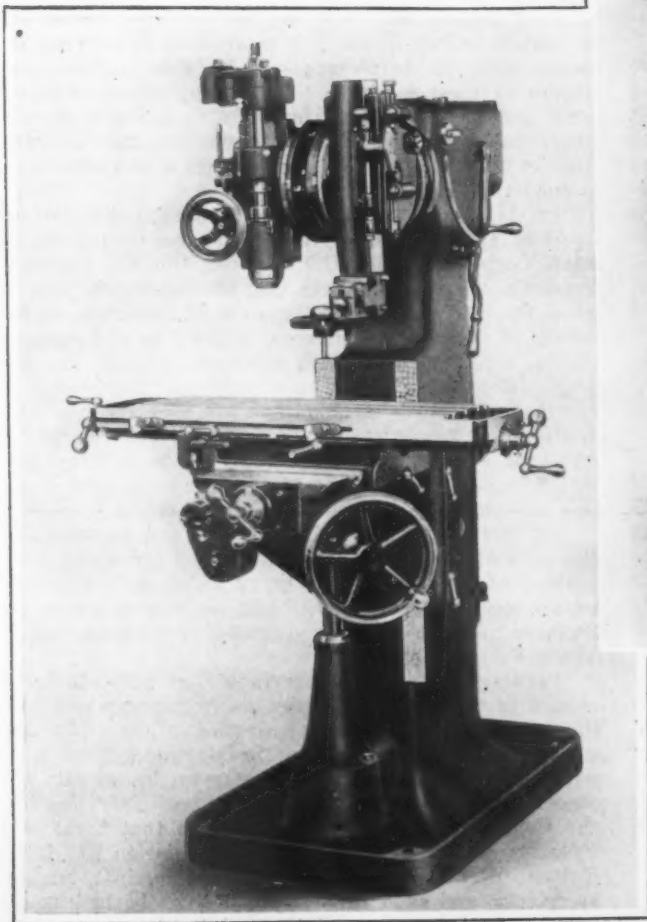
Petitioner, therefore, respectfully asks that by reason of the foregoing facts disclosing acts and conditions set forth in this application of unlawful discriminations in price, and of unfair methods of competition in commerce, this Commission investigate the matter complained of and if, upon such investigation, the Commission has reason to believe that there is a violation of law over which the Commission has jurisdiction, that a complaint be issued against the respondents, and such further proceedings be had as the law requires or contemplates and to the Commission shall seem meet.

Failure of Cast-Iron Acid Eggs

Two cases of failures of cast-iron acid eggs containing mixed acid (sulphuric and nitric acids, both concentrated) used in the manufacture of trinitrotoluene, were discussed by A. C. Cumming, of the Lothian Chemical Works, Ltd., of Edinburgh, Scotland, before the Edinburgh section of the Society of Chemical Industry last January. Both the accidents occurred two years ago while the acid was discharged from the egg under a pressure certainly below 60 lb. per sq. in. The one egg had a diameter of 4 ft., a depth of 4 ft., and a wall thickness of 1 in.; the other egg had the corresponding dimensions of 6 ft., 6 ft. and 1½ in. In both cases the vessel seemed rather to cave in than to be blown outward, though it disrupted into small fragments. There was not any notable corrosion of the iron nor any diminution in the tensile strength of pieces taken from the inner surface. Photomicrographs taken by Dr. Desch disclosed however an accumulation of large plates of graphite forming a network of surfaces along which acid might enter the metal. Further examination showed that the acid had actually penetrated into the metal to a depth of one-third of the shell and that small masses of salt crystals had formed.

It is concluded that the expansive force of the crystals had caused the rupture and that the air pressure of the blowing operation had little to do with the failure. For the crystals and cracks were also observed in vessels which had never been under pressure. A similar observation was reported by Knietzsch in 1901 when he investigated the action of fuming sulphuric acid on cast-iron. Knietzsch observed evolution of both sulphur dioxide and sulphuretted hydrogen and he held the gas pressure partly responsible for the failure; the assumption seems plausible, though Cumming questions it.

The Marting Iron & Steel Co., Ironton, Ohio, will break ground in a few days for a Dwight-Lloyd sintering plant, to take care of the ore dust from its blast furnaces. The proposed plant will have a capacity of 150 tons per day.



Universal Vertical Millers and Shapers

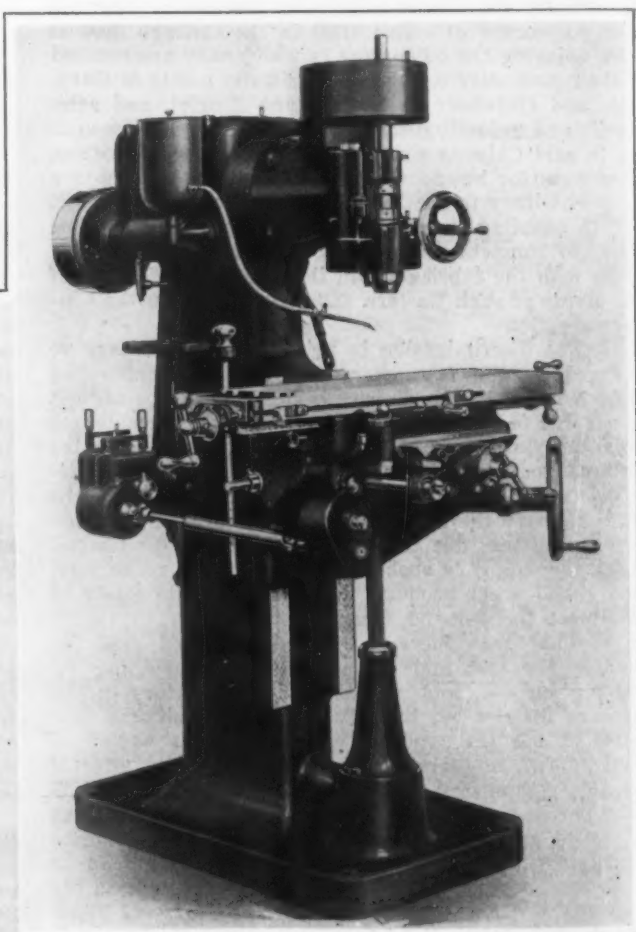
The Cochrane-Bly Co., Rochester, N. Y., has recently made several modifications of its duplex universal miller and shaper, fitting it with single heads only. The machine is now built as a duplex universal vertical miller and shaper, universal vertical miller only, universal vertical shaper only, and a plain vertical miller.

The universal head on both duplex and single machines adjusts right to left, or left to right the full circle, and the shaper and milling heads adjust independently front and back 40 deg., and are operative in any position.

The milling spindle has an adjustment of 3½ in. with hand feed. A micrometer screw is provided on the spindle housing to gage depth of mill, drill, etc. The spindle is hollow, and is furnished with draw bolts for holding milling cutters, split collets, etc. Drilling, milling, boring and slotting operations can be performed at any angle, and at one setting of the work.

The shaper ram is adjustable for strokes from 0 to 6 in. The tool head is adjustable on the ram, the full circle and clapper block being operated positively by a toggle-link and adjustable dogs. The crank arm or link is made of solid steel, and compensation is provided in the crank pin box to take up the wear on both crank pin and link.

The drive is through a friction clutch pulley and double cone of gears running in a bath of oil. The direction of spindle can be reversed in the machine, and it also can be disengaged and revolved by hand.



Above is a Plain Vertical Milling Machine with Friction Clutch and Single Pulley Drive. At the left is the machine equipped as a vertical miller and shaper. On the facing page, in the upper circle, the head of a universal milling machine is shown inclined left to right. In the lower circle, the head of the vertical miller and shaper is swiveled right to left, and the milling spindle is swung back in the throat of the machine, leaving space clear for shaper operations. In the center is a 12-in. circular table with hand feed and 10-in. compound circular table mounted in combination.

A locking pin is provided to lock the spindle when changing cutters, etc.

A cone brake opposes the clutch, and engages when the clutch disengages thus to bring the machine to a quick stop.

Five changes of speed are obtained by shifting a lever within reach of the operator in working position.

A circular table with dividing attachment, and a compound circular table are furnished in connection with these machines. It is pointed out that with these attachments, holes in jigs can be drilled and bored on five sides of a cube at one setting of the work, radial slots can be accurately spaced and planed at any angle from the horizontal to the vertical, and key ways spaced any number of degrees and minutes and cut in either straight or taper holes or with any desired draft.



It is explained that a die block can be drilled, bored, and machined with a milling cutter and slotting tool on all angles and curves, and filed without removing the work from the machine. By using the circular and compound tables in combination, dies and other parts can be machined from any number of centers, and two or more radii blended, and intricate forms and shapes developed with precision. Examples of such work are tools and templates for tire molds, molds for bakelite and other insulating material, dies for die-casting metal, molds for glass ware, battery connections, dies for blanking and forming sheet metal, metal pattern work, etc. Provision is made on both longitudinal and transverse slides to provide for the installation of a standard B. & S. vernier scale outfit thus to insure accurate measurements.

The plain milling machine is provided with 10 spindle speeds, and 12 feed changes, and will take any of the standard attachments furnished for the universal machines.

In addition to the circular and compound tables, a plain milling machine vise, drill chuck, spring chuck, collets, sleeves for Morse and B. & S. tapers, draw bolts, centers and expanding arbors can be furnished, also a motor drive can be applied.

Factory Appliance Exposition Announced

The International Factory Appliance Exposition is the new name chosen for the permanent exposition in Grand Central Palace, which was announced a few days ago as the International Material Handling Machinery and Factory Appliance Exchange. The changes in the name will not affect the original scope planned for this exposition, which is one of eight permanent exchanges being inaugurated for the eight upper floors of the exhibition building by the Merchants and Manufacturers Exchange of New York, owned and controlled by the Nemours Trading Corporation, Alfred I. duPont, president. C. R. Ringenberg, formerly of the Material Handling Machinery Manufacturers Association, now secretary and manager of the exposition, can be reached at suite 421, 405 Lexington Avenue, New York.

New Structural Business Normal

The fabricating shops of the country are now booking a normal business, 65 per cent of capacity or 117,000 gross tons having been contracted for in June, according to records of the Bridge Builders and Structural Society, 30 Church Street, New York, compiled by George E. Gifford, secretary. New business has increased over five-fold from the low point of 12 per cent in January, but averaged only 30 per cent for the first half of 1919, as compared with 60 per cent for the first half of 1918; and for that period of the year—59 per cent in 1917, 46 per cent in 1916, 54 per cent in 1915, 67 per cent in 1914, 34 per cent in 1913, and 62 per cent in 1912. It also exceeds the average of the 7-year period, 1912-1918, which was 61.3 per cent of capacity.

Employees of the John Wood Mfg. Co., Consohocken, Pa., are voting upon the proposition of working three 8-hr. instead of two 12-hr. shifts. The decision will be announced during the week.

BETTER LORRAINE PROSPECTS

German Depreciation of Saar Coal Claimed and Throttling of Lorraine Development

The effort on the part of Germany to prevent over-developing her iron and steel resources at frontier lines and to depreciate unduly the metallurgical value of the Saar Valley coal is the burden of an extract translated by Sir Robert Hadfield from a book by Fernand Engerand, entitled "Le Fer sur une Frontière." Parts of this translation follow:

We find that when the war broke out in 1914, out of her 355 blast furnaces, German had 165 on her eastern and western frontiers, which alone produced about one-half of the total pig-iron output of the Empire (that is, 8,785,000 out of 19,291,000 tons).

That was a weak point, and another such might easily have proved fatal. At this same date, out of 50½ million tons of iron ore consumed by German metallurgical works, 28½ millions were drawn from the Lorrainian frontier and more than 14½ millions were imported. And a specially aggravating circumstance was that the extraction of these 28 million tons of Lorrainian ore was confined, on the frontier, to a sector measuring 20 km. (12.5 miles) by a maximum depth of 6 km. (3¾ m.), and even of 2 km. (1¼ m.) at the most active point (Hayange-Moyeuvre).

If the French had strictly guarded the frontier from Longwy to Briey, the French Army could have kept within gun-range nearly two-thirds of the German iron ore, and the blockade would have deprived Germany from getting the remainder. Under these conditions a Franco-German war should have only been an engagement of short duration—had we but known in France. But did we know?

As the Germans had put their Lorrainian basin under the protection of the forts of Metz and Thionville, our Briey frontier was defenseless; the German Army, even before the declaration of war, took the essential points of the Briey basin without striking a blow, and so nullified the danger of having their ore supplies cut off and their metallurgical output reduced—inflicting on the enemy by a counter-stroke the two-fold injury which was feared by him.

By the return of these regions to France, with whose destinies nature has expressly associated them, they will again, by force of circumstances, enter fully upon that prosperity which has so long been denied them, because it will be to the interest of France to develop them thoroughly.

The surest means will be to exploit fully the col-

lieries of the Saar. Output must be intensified, thus enabling metallurgical coke to be made from the coal extracted. As Germany had an abundance of coal, it was naturally to her interest to restrict the output of these collieries. France, poor in coal, must, on the contrary, see that they are worked to their fullest capacity, so that these regions of Lorraine, as well as the entire country, may be benefited. This is a state matter, and, in my judgment, the best method will be for the French Government to take the place of the Prussian treasury, not only in the possession, but also in the working of these collieries. Perhaps the French administration will be able to remedy the unsuitability of these coals for metallurgical purposes by offering a reward to the inventor who is able to achieve this.

We hold and we shall dominate German metallurgy for a long time simply through this question of ores, which can only be found in sufficient quantities in Lorraine. Already we hear the appeal of the iron and steel industry on the right bank: "If an importation of ore from Lorraine is not made quickly"—we read in the *Rheinisch-Westphalische Zeitung*, for Dec. 21, 1918—"our blast-furnaces must shut down, as, owing to imports from Lorraine having ceased, the great industries on the right bank of the river must cease work." A differential tariff on minerals intended for either bank of the Rhine would of necessity attract metallurgical operations to the most favored bank, inasmuch as the pretended unsuitability of the Saar coke for metallurgical purposes was merely a blind.

Decided upon in 1870, and practically carried out as far as Metz in 1871, the canalization of the Moselle was to be effected in accordance with the Treaty of Frankfurt, but the Germans evaded this obligation, in spite of the protests of those interested. The cost, however, was not very great.

The canalization of the Moselle would have reduced the cost-price of pig iron for Lorraine by about two marks, and the cost of transport of the finished products by more than three marks; and the canalization of the Saar would have had the same effect in regard to the iron and steel works of that region. Under such conditions as these, Westphalia would have been unable to bear the blow.

By having returned to us the metallurgical works in the regions in Lorraine which were formerly annexed by Germany, we shall now more than double our output of iron and steel and pass from a state of under-production to over-production, which will render necessary an export policy. We must open up an overseas market for these industries, and those incomparable waterways will assure it naturally.

France Removes Restrictions on Iron and Steel Products

WASHINGTON, July 22—According to a cablegram from C. D. Snow, Commercial Attache at Paris, the French Government has abolished all important restrictions on iron and steel, except on arms and ammunition.

"A decree of July 8 published in the *Journal Officiel* of July 13," also cabled Mr. Snow, "abrogates the decree of June 14 relative to ad valorem surtaxes and establishes for each article a coefficient representing the difference between the value of the goods in 1918 and that in 1913. The amount of the import duty will be determined in each case by multiplying the duties specified in the customs tariff by the coefficient. The highest coefficient number is 3. A periodic revision of the table of coefficients will be made by an interministerial commission to be appointed later."

The earlier surtax law to which reference is made provided for ad valorem surtaxes in addition to the regular specific import duties on most classes of manufactured products. Under the new arrangements, duties will be specific in form (except for the few products subject to ad valorem duties previously) and the regular duties will be increased in proportion to the increase in prices between 1913 and 1918. As the highest coefficient is 3, no rate of duty will be increased more than 200 per cent. However, these are subject to revision.

Little High Speed Steel Business to Be Expected with France

Samuel S. Buckley and Edgar D. Newkirk, president and secretary-treasurer respectively of the Onondaga Steel Co., Inc., Syracuse, N. Y., have returned from a short trip abroad. They sailed for France late in May and spent the month of June in that country to participate in a matter of engineering consultation. Mr. Buckley says that there is a decided feeling of labor unrest throughout France; that nearly five years of war have left the workers in a more or less dazed condition and hardly able to realize the significance of the national eight-hour day. Most of these workers have been in the government service and it is exceedingly difficult for them to adjust themselves to peace time condition or to show an eagerness to get back to industrial life.

Both Messrs. Buckley and Newkirk state that there is little to fear in French competition in the American market. Likewise, they did not think that America will make very great inroads into the French market. For a long time to come, or until France gets on her feet, England and Sweden will supply most of their imports of tool steel.

Wages in the steel mills are very high today as compared with pre-war days. In fact, they compare favorably with wages paid in this country.

FRENCH IRON IN ENGLAND

Government Offers 10,000 Tons Per Week from German-Owned Furnaces

Competition of cheap pig iron from German-owned furnaces in Lorraine now controlled by the French Government is the latest source of concern to the British iron trade. The *London Iron and Coal Trades Review* thus discusses the new development:

"Competition from the Alsace-Lorraine district is already upon us. The tables are rapidly turned! The French Government, which has taken over the German-owned works in Lorraine, finding that at the moment it has only a small demand for the basic iron which is made there, has made an offer to supply British steel works with 10,000 tons a week of basic iron for the next four months. This iron would, of course, normally be used in the steel works of Belgium and Northern France, but until these steel works are rebuilt and re-started there is a large surplus of pig iron and no local demand. In this country, on the other hand, there is a distinct shortage of pig iron due to the Government war policy of financing extensions for steel works, while refusing anything like reasonable terms to the pig-iron makers.

"The French Government offers the iron at 217½ francs per metric ton, delivered Antwerp, which at the rate of 30 francs to the £1, is equivalent to £7 3s. per ton. This is considerably below the price at which basic iron is obtainable on new contracts in this country. To the French price freight and insurance from Antwerp has to be added. The Lorraine pig iron is made in two qualities, low and high manganese, the low averaging about one-half of 1 per cent, while the high runs from 1 to 1½ per cent.

"If this offer was made by a private firm there would be drawbacks, as, for instance, deliveries due to difficulties in carriage of the iron between Lorraine and Antwerp. In the ordinary way this would be rather a doubtful factor. The French Government, however, it is understood, is prepared to make the necessary arrangements for the delivery of the iron at Antwerp, and in point of fact the French Government is acting as seller.

Foreign Demand for Machinery

WASHINGTON, July 22.—Information received by the Department of Commerce indicates the need in Holland for large quantities of machinery and hardware. The reports declare that the country needs machines for coal mining, food preservation (such as drying apparatus for potatoes and other vegetables), machinery for textile industries and for sugar refining plants, and also locomotives. Standard electrical goods are also in demand, including lighting installations, telephone material, accumulators, and benzine motors to run small dynamos.

Consul John Q. Wood, Constantinople, reports that the Council of Credit institutions in Georgia (Transcaucasia) has on hand 484,000 long tons of manganese among other raw materials which it would like to exchange for American manufactures, especially weaving and spinning machinery, motor cars, turbines and electrical supplies and accessories, etc.

Revised figures compiled by the Russian-American Committee for the Far East report that the warehouses in Vladivostok on May 30 still contained 7100 long tons of machinery and lathes, 2225 tons instruments and hardware, 1200 tons of metals and 26 tons of tin plate.

In connection with the agricultural and forestry inspection service of the Madagascar Government, there has been recently established a bureau for the purpose of furnishing information of all kinds concerning machinery and other material suitable for the development of the agricultural and forestry resources of the island, including stock raising and breeding. The chief of the bureau of information has written to the consulate expressing a desire to receive from the United States for his files, catalogs, correspondence,

"An interesting point about the offer is that it is largely possible through the rate of exchange. If the franc was worth its normal value the price would be so high as to render the business much more difficult. The low rate of exchange acts in much the same way, however, as if a bonus upon export was granted by the French Government. This matter was referred to in the House of Commons this week by Sir Auckland Geddes, who intimated that it was having the attention of the Government with a view to the protection of British traders. It is a particularly serious position when the German mark is worth about 4d., and with the possibility that it may fall to a still lower figure before very long.

Other Foreign Materials Offered

"Altogether, the outlook for the British producer is not a very reassuring one. We have not, as yet, received a definite pronouncement by the Government on the question of our tariff policy, although as soon as peace is signed this surely cannot be long delayed. In the meantime, in addition to uncertainty in the labor world, makers are faced with offers of foreign material on all hands, which are only held back by the high rates of freight ruling. American billets would otherwise swamp the market here; and as regards pig iron, for the first time in our history we are faced with offers on a large scale of foreign iron at lower prices than the British makers can quote. There have been in the past, from time to time, small imports of pig iron from Alabama, Spain, and during the war a considerable import of American basic pig iron was arranged for. Under ordinary circumstances, however, the British pig iron maker has always held his own home market, although this has been done by often selling iron at no profit, and never at a continuous reasonable profit, judged by Continental and American standards. It is clearly impossible to interest capital in the pig iron and steel industry if from time to time it is to be faced with the import of foreign material, which reduces profits to the vanishing point. It so happens at the moment that there is a great scarcity of pig iron, and a considerable quantity could probably be imported without materially affecting the market, but experience shows that once trade of this sort starts it is very apt to become a permanent feature."

prices, etc., covering agricultural machinery, particularly plows; textile machinery; machinery for manufacturing banana and potato flour; grain elevators; machinery for transporting agricultural products by aerial cable, rail, river, etc. Correspondence and literature should be addressed: Inspection Générale de l'Agriculture et des Forêts, Service des Renseignements, Tananarive, Madagascar.

Continuous Wire Rod Mill in England

A continuous wire rod mill has been put in operation at the Ickles works of Steel, Peck & Tozer, Ltd., Sheffield, England. It is a Morgan mill with a rated capacity to produce 1500 tons of No. 6 wire gage or 0.192-in. diameter rod, the week comprising 10 shifts of 10½ working hours each. The general features of the mill were described in the *Engineer* of London, June 20, but details of the rolling equipment are not given. Two billets can be passed through the mill simultaneously, one billet being fed into the first pair of rolls when the preceding one has gone half way through. The rolls are mentioned as averaging in diameter 10 in. and the general speed of the mill is such that a billet is finished in a minute; that is, the output is about two billets per min. when the mill is running double. The roughing train consists of seven pairs of rolls, the intermediate of four and the finishing of six. The mill is steam engine driven but the power or size of the engines is not given.

The Cohen Austat Iron & Metal Co., Hamilton, Ohio, has been formed by William Cohen and others to operate a scrap metal yard.

Circulating Pump of New Type

A new type of pump for circulating purposes has been placed on the market by the Michigan Machine Co., Detroit. It is intended for cutting fluid circulation and force feed lubrication for machine tools, oil circulation for automobile engines, fuel oil systems, refrigerating systems, automatic water systems, etc. Its principal working parts consist of two rollers which rotate eccentrically in the pump chamber. The entire motion is rolling, thus eliminating wear caused by scraping of working parts against the pump chamber. It is stated that the machine is self-priming, may be used anywhere within 10 ft. above the level of the liquid and will prime itself, requiring no valves; also that the positive suction is not affected by aeration.

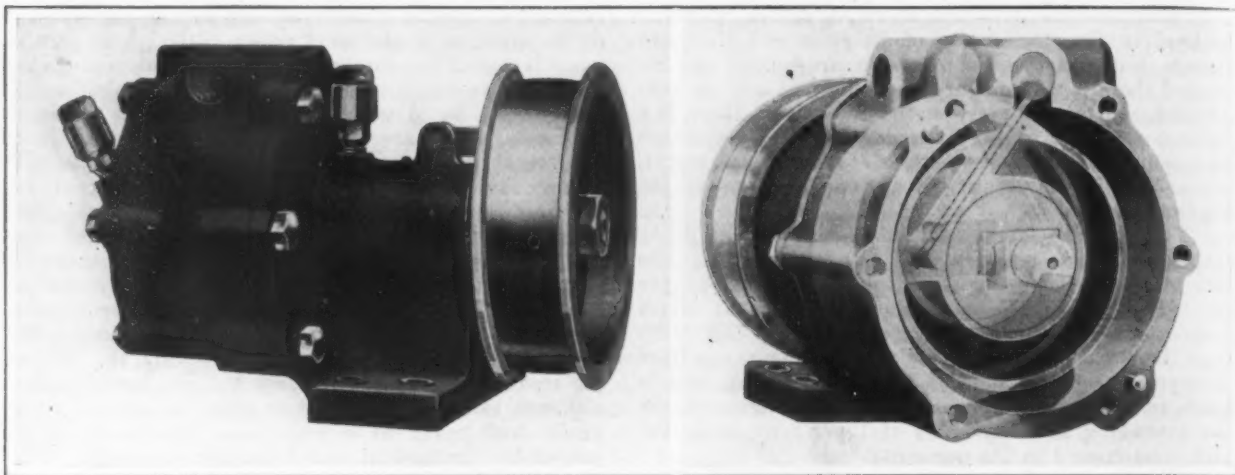
It is explained that no relief valves or overflow piping are required, as the outlet in the discharge piping

spring to develop 25 lb. pressure at 200 r.p.m.; 40 lb. pressure at 420 r.p.m., etc. The pumps can be equipped with springs to develop either higher or lower pressure as required, or without springs where very high pressures are required. The pumps will be available in sizes ranging from $\frac{1}{4}$ to 2-in. intake and outlet.

Safety and Licensed Machinery

The difficulties encountered by manufacturers in equipping leased machines with safety devices are pointed out and a solution for the problem is suggested in an article in the *Traveler's Standard*, published by the Travelers' Insurance Co., Hartford, Conn. The article is in part as follows:

Many manufacturers are willing to provide guards for leased machines, but are hesitant on account of the formalities connected with such a move, such as



Two Rollers Which Rotate Eccentrically Constitute the Principal Working Parts of This Circulating Pump. Self-priming and elimination of relief valves or overflow piping are features

may be closed and the pump allowed to run without damaging pump or piping. This result is obtained by the use of a spring placed in the rectangular slot in the inner roller which bears against the squared shaft. This spring operates only when the pressure on the pump is as great as the pressure required to compress the spring. When this pressure is reached the compression of the spring allows the rollers to come to the center of the pump, where they continue to revolve in the liquid without exerting further pressure.

The manufacturer points out that because the action of the pump is to roll the liquid in front of the pump rotor, it is not affected by foreign matter in the liquid and will not clog, as cast-iron and steel chips, paper, rags, waste, etc., which can pass through the intake pipe will pass through the pump without clogging or damaging it. Should a chip stick, the spring will compress, allowing the roller to pass over the obstacle without damaging the pump and it will be washed out on the next revolution of the motor.

The pump may be used upside down or right side up and at any point on a machine where its application is most convenient; also either side of the pump may be used as intake or outlet. Plain pumps may be used on a reversing machine where no liquid is required when the machine is reversing. The pump can be reversed without harming it and it will deliver liquid again immediately its proper direction of rotation is resumed. A pump can be equipped with reverse valves where it is necessary to maintain a constant flow in a given direction, regardless of the direction of rotation of the pulley.

The pump may be operated at speeds ranging from 100 to 600 r.p.m. or more, making it applicable to all types of machines; operation at very low speeds, however, insures a longer life. It is emphasized that this pump design eliminates the necessity of using numerous sizes, makes and types of pumps in order to obtain maximum efficiency on various types of machines; also eliminates the need of carrying repair parts for different types of pumps.

Standard pumps are furnished with controlling

obtaining permission to install, securing approval of the type of guard, and coming to an agreement as to the best way to attach the guard. The safety engineer or inspector upon suggesting the need of guards on some of these machines is at once confronted with the non-ownership problem. He must persuade the lessee to seek permission to equip the machines with guards, and after this permission is granted he must see that the guards are put in place. All this means delay in abolishing hazardous conditions, and delays of this nature are especially dangerous. We see no good reason why manufacturers of leased machines cannot design suitable guards for such parts as may prove hazardous to the operator, and allow these guards to be installed by the owner, preferably without cost, or at all events at a nominal additional rental charge. Or blanket permission might be given to every lessee to equip the machines with effective guards of any approved design.

It is evident that the ideal solution lies in the hands of the machine manufacturers, and that it is to be sought upon the designing board. Guards which will in no way interfere with the purpose for which the machine is constructed, and which will reduce the potentiality of the machines as accident-producing agents, can readily be incorporated in the original design and made an integral part of the finished structure at the very outset. All mechanical guarding experience has shown that such guards are less costly, and frequently more efficient, than guards installed after the machine is completed.

The McCann-Harrison Co., Cleveland, has recently been formed by H. P. McCann, formerly sales manager for the American Shop Equipment Co., Chicago, and James M. Harrison, formerly with Baker-Smith Co. and Almirall & Co., New York. The company has opened offices in the Sloan Building, and will do a general engineering business, specializing on heating, ventilating and power installations, special heat-treating equipment and complete industrial plants.

Industrial Democracy in Operation

B. C. Forbes Describes the Representative Plan Which
Has Been Adopted by a Number of Companies—
Address Before Editorial Conference in New York

B. C. FORBES, publisher of *Forbes Magazine*, delivered an address on Industrial Democracy at a recent meeting of the Editorial Conference of the New York Business Publishers' Association, Inc., at the Automobile Club of America. Mr. Forbes, who was introduced by V. E. Carroll of the *Textile World Journal*, acting as chairman, described the plan of representative government which has been introduced by the American Multigraph Co., Cleveland, and by a number of other companies. It is conceived along the lines of the United States Government, there being a president, who is the president of the company, a cabinet, consisting of the senior officers, a senate consisting of the superintendent and foremen and sub-foremen, and a house of representatives, elected by secret ballot, the members being of the rank and file of the workers themselves. No man who has any authority over any man, no sub-foreman or any foreman of any kind, is eligible for the house of representatives. Mr. Forbes said in part:

"Under this plan, every saving that is brought about in any department is shared 50-50 with the workers. Some of the results have been unbelievable, and in several instances men have come and said: 'We can earn good wages at a lower piece-work rate.' In other instances, men have come and said: 'Really, we used to loaf on the job. We are only working one machine. We can do three machines. Give us a chance at it and we will each of us work three machines.' The men knew if they could eliminate two out of every three in that department, those that stayed would share 50-50 in the savings. And they called that 'the wage dividend,' payable usually every two weeks.

"Now, the beauty of this plan is that it not only enables the workers to add to their wages by their own direct effort by increasing their production, but it cuts out waste, which is tremendously important, by attending regularly and by stopping all sorts of excuses for holidays, so as to increase their efficiency, increase their earnings, and as a consequence, increase the profits of the concern.

"That is an important phase of it. It enables the workmen to get more out of it; but that in itself won't fill the bill. The more I see of profit-sharing plans—and I have been devoting a great deal of time and study to profit-sharing—the more I see of it the more fully I am convinced that the ordinary system of profit-sharing will not solve the labor problem.

What the Workman Wants

"What the American workman wants—and what he is entitled to have—is some say in the running of the business. He may be dressed in overalls and he may have black hands and grimy face and all the rest of it, but he has just the same aspirations and ambitions as you and I have. He likes to feel that he is somebody; he likes to feel a sense of the responsibility; he likes to have some elbow-room. He doesn't want to be a cog in a machine. He doesn't want to have a tin tag tied around his neck with a number on it. He wants to be a rational human being. He wants to be able to take some pride in his job. He wants to be a full-grown man. He lives in a democracy, and he is saying to himself: 'If democracy is a good thing in running the country, why isn't it a good thing in running industry, in running this business?' And experience has taught that by giving the men a chance to have some say in the things that affect them in the running of the business, the results are satisfactory beyond all imagining.

"In only two cases, I believe, where industrial democracy has been introduced, has it been abandoned, and in

both those cases it was abandoned because the employers thought that all their worries were over now and they could go back to the old way of doing things and become autocrats again, and they found later they made a mistake. It probably strikes you, it struck me, as rather dangerous to give the ordinary workmen any part whatever in running the business. Now, this is what happened: not in one instance has a house of representatives passed any law, endorsed any proposition of any kind, which the president of the concern had to veto. To me, that is wonderful. Once the men were convinced that the boss was on the level, that he meant to give them a square deal, that they were actually having some say in the hours and the wages and in other matters affecting their daily work, once they were convinced of that, they became sober by the sense of responsibility. They began to look at things not only from their own point of view, but from the company's point of view. The esprit de corps in different plants that I have visited, as I say, is positively unbelievable. The men like it. They are happy under it. They are earning more money under it. They feel that they are full-grown men, that they are free-born citizens; that they have a responsible place in life where they can maintain 100 per cent self-respect.

Attitude of Unions

"I have been asked since I came up here how this plan is looked upon by the unions. I asked Mr. Leach his experiences with the unions. He said to me: 'When I undertake to put in industrial democracy in any plant, I never ask, I don't care, whether they are union men or non-union men, or partly union men and partly non-union men. This plan doesn't deal with unionists and non-unionists. It deals with everybody as human, and so far we have had no trouble in any plant with the unions.

"A man can be a member of a union and work in a plant which has industrial democracy. He can be a non-union man and work in a plant. It doesn't make any difference. Whether the Big Six would object to industrial democracy, since it carries with it this wage dividend, I don't know. I hardly believe they would, although you never can tell. It seems to me that some of the treatments that publishers have received lately from engravers and some of the other crafts and unions are inclined to go fairly far. Sometimes I think they do things that are not for their own ultimate good, but I believe the chances are that the Big Six, if this plan could be laid before them, if a committee of the union leaders could be sent to the plants where industrial democracy is in operation, and talk with the men there—just find out the conditions where it is applied—I can't conceive of any committee of union men that could go back and say: 'We don't want anything to do with this.' The only people I can conceive of taking that attitude are out and out Bolsheviks who want trouble and deviltry, instead of having things running smoothly.

Some Results

"I don't want to talk longer, but I could go on and relate a great many instances of things that have occurred under industrial democracy. Showing how it has improved the men, I could also recite talks I have had with the executives of concerns who in effect say, all of them: 'We are bigger, broader men ourselves since we introduced industrial democracy. Life is worth living for us now. We don't carry all the burdens of running this plant. The men share with us our difficulties and our troubles. We find them always

reasonable. We have gotten on a man to man basis now and we are all working together.'

"If this plan, or some similar plan, which gives the men a sense of responsibility, a sense of freedom, a sense that they are part and parcel of the organization, that they are not just workers to be bossed around and kicked around; if this plan, or some other plan, that does that is not introduced on a large scale in this country, I swear I think that the fears and the apprehensions that I know exist in the brains of the biggest men in this country, the largest employers, I say I think their fears and apprehensions are only too well founded."

Safety Supervisors Graduated

The Northeastern Ohio Safety Council graduated the first class of safety supervisors following the completion of 15 lessons covering a period of as many weeks. There were 130 men who received diplomas from the National Safety Council indicating that they had satisfactorily completed the established course. The subjects covered dealt in a comprehensive way with the entire field of safety-first activities covering the mechanical as well as the educational factors. On each evening during the course a speaker of experience in his particular line gave a talk elaborating the printed outline provided, followed by numerous questions and expressions of experience from the members of the class. So interested has this group of men become in the work that they have formed an organization with elected officers and intend to meet at regular intervals during the coming fall and winter for the discussion of safety and kindred problems.

At the graduation banquet, C. W. Price, general manager, National Safety Council, Chicago, addressed the graduates on "The New Ethics in Business," pointing out the fact that the moral law applies in business life just as it does in the home and that aggressive business men throughout the country have come to a realization of this fact and are diligently expressing their belief. Safety work is a vital factor in putting forth this belief and all of those actively interested in carrying on safety work will feel its influence on their efforts. S. W. Tener, president of the Northeastern Ohio Safety Council, presented the diplomas. Thomas Stanion, president of the class of safety supervisors, presided as toastmaster.

Effects of New Law

The Massachusetts law restricting the hours of labor for women and minors under 18 years of age to 48 hr. a week and no more than 9 hr. in any one day, went into effect July 20, and produced, in many instances, somewhat radical results. The 54-hr. week had prevailed generally in establishments where women and boys were employed, comprising the textile and kindred industries and, of course, a great many metal-working factories, particularly those manufacturing the multitude of products for which skilled labor is not a requisite.

In works where women and boys constitute an important element of working forces the hours have been reduced either for the establishment as a whole, or for those departments in which there are few men. Some plants which have employed relatively few women and boys have discharged them to obviate the necessity of disturbing existing hour schedules.

In a great majority of cases where hours have been shortened wages have been increased to a point where weekly earnings are not reduced.

Toledo Strike Ended

TOLEDO, OHIO, July 21.—Strong public sentiment arrayed from the first against the workers did much to break down the strike of 12,000 employees of the Willys-Overland automobile plant. Announcement by company officials that close to 10,000 were working gives evidence that the workers have lost. The hardest blow dealt the automobile company was the walkout of the drop forgers and machinists. Labor leaders say these employees and other skilled labor will not

return. To offset this, the company had inaugurated trade schools, giving opportunity for thousands who seek to master the higher branches of skilled labor. John N. Willys, 50-50 or profit-sharing idea had but little bearing on the causes leading up to the walkout, it is believed, the classification plan therein by which a worker's worth was to be judged being the only one singled out for attack.

Agitation fanned by "outsiders, mostly foreigners," caused the strike, officials said, and the public backed up the company.

Because the plant was run at a loss in the quarter ending June '30, there will be no distribution of profits to employees who remained loyal, it is stated by Vice-President Clarence A. Earl. The plan is to be continued, however, and the loyal workers will get their share along with the newcomers.

The public likewise backed up Federal Judge Killits, who granted an injunction against the workers, restraining them from interfering with the operation of the plant. The plant still is being operated under Federal supervision and is being picketed.

In the World of Labor

The plants of the Interstate Foundry Co. and Acme, Palmer & DeMooy Foundry Co., Cleveland, and the Best Foundry Co., Bedford, Ohio, are practically shut down as a result of a strike of approximately 300 molders and core makers who have gone out to enforce demands that the three plants be made union shops.

The Carnegie Steel Co. is considering a plan in the Youngstown district to lend money to employees at 5 per cent to build their own homes on lots owned by them. Canvass is being made of the local plants to determine the extent to which the workers are desirous of receiving such aid. A year ago, the company began erection of concrete houses for its workmen at Steelton, near the Ohio works. They were sold to employees on a cash payment of from 5 to 10 per cent of the cost and the balance in monthly installments, deducted from their wages. This plan was so successful that the company was unable to build houses fast enough to satisfy the demand. Under the enlarged plan the company's contractors would build the houses for the men, if desired.

The Westinghouse Lamp Co., Bloomfield, N. J., has discontinued the bonus plan for employees, operative at the plant during the war period, at the same time increasing the general wage scale about 10 per cent, effective July 21.

Following a holiday shut-down during the early part of the month, the New Departure Mfg. Co., Bristol, Conn., a subsidiary of the General Motors Co., has placed a new wage scale into effect comprising a 10 per cent advance, 48-hr. week, and time and one-half for overtime. The plant is giving employment to about 4400 workers.

About 8000 employees at the different plants of the International Harvester Co., Chicago, are out on strike with demand for a closed shop. The plants affected include the Weber Wagon Works, McCormick Reaper Works and the McCormick Tractor Works. The company, in a statement issued, say the average hourly wages of employees have increased 114 per cent since June, 1914.

Wages of machinists at the different contract shops at Peoria, Ill., have been advanced from 80 to 92½c. per hr.

Following a shut-down for about three weeks about 500 employees at the plant of the National Conduit & Cable Co., Hastings-on-Hudson, N. Y., returned to work July 14 out of a total of approximately 2000 workers. The others are still out.

The Bristol Brass Co., Bristol, Conn., has advanced the wages of employees about 10 per cent, being made effective dating from June 30. The minimum wage has been advanced from 30 to 35c. per hr.; a 48-hr. week schedule is being maintained. The plant is employing about 1100 workers.

Capitalists and manufacturers at Youngstown, Ohio, are back of a plan to organize a housing corporation to

build 5000 homes for workmen in this city, starting at least half of this number in 1919. Joseph G. Butler, Jr., of the Brier Hill Steel Co., also a director of the Youngstown Sheet & Tube Co., is working out details of the plan. It is planned to loan up to 90 per cent on the cost of a dwelling at a very nominal interest. The house shortage has adversely affected the labor situation in this city, preventing workers from coming here because of high rents.

The employees of the Reading Iron Co., Reading, Pa., who have been on strike, have agreed with the company on a puddling rate of \$10.75 per ton, with other tonnage rates in proportion, and the strike has been ended. The strikers asked for \$10.92½ per ton. The rates are to take effect immediately and to continue in force for the months of July and August, after which they will be subject to change every 60 days on the sliding scale basis. The arrangement is to remain in force until July 1, 1920.

A proposed appropriation of \$100,000 by the Wisconsin Legislature for the maintenance of 21 employment offices has been disapproved by Gov. E. L. Philipp, who says that not only is the aggregate of all appropriations at the 1919 session far above normal, but labor conditions are such that so large an appropriation for employment work is unnecessary. Governor Philipp recommends that labor agencies which in six months placed less than 1000 applicants be discontinued. This would eliminate the offices at

West Allis, Marinette, Eau Claire, Marshfield, Manitowoc and Watertown.

The Associated Industries of Missouri have taken steps to counteract the efforts of labor organizations to obtain a referendum vote on the recently enacted Missouri workmen's compensation act. Letters protesting to employers throughout the state against efforts to have the workmen's compensation act suspended without giving it a fair trial have been sent out by the Associated Industries of Missouri.

A state board of conciliation to act as arbitrator of labor disputes over wages has been created in Wisconsin by enactment of Chapter 530, Laws of 1919, which went into effect upon publication, July 14. The board will consist of three members, one of whom shall be a skilled employee, but not having employing or discharging power; one of whom shall have a general knowledge of manufacturing and labor conditions, and one of whom shall be an employer of labor.

The Western Steel Car & Foundry Co., Hegewisch, Ill., was closed on July 14, following demands of the stationary engineers, firemen, oilers, locomotive and electric crane men for wage increases of from 50 to 75 per cent. About 12,000 men were working at the time.

The Niles Tool Works Co., Hamilton, Ohio, adopted the 45-hr. week for its machinists and molders and at the same time making a flat advance of 20 per cent in wages.

Will Need Large Steel Tonnage for Battleships

About 300,000 Tons Will Be Required, One-Third
Armor Plate—Hurrying Work on Charleston Plant

WASHINGTON, July 22—Navy requirements of steel for big battleship and cruiser construction for the next three years are estimated at about 300,000 tons, one-third of this being armor plate. Of this total, only a small portion has been contracted for.

Twelve ships are included in this list, six dreadnaught battleships and six battle cruisers. The details of all of them have been changed considerably since the program was first made up, so that all of them will be in excess of 40,000 tons displacement. On this basis, they will consume a total of approximately 200,000 tons of construction steel and half that amount in armor. Their armament, of course, will add thousands of more tons to the total.

More than two months ago, the navy commandeered about 20,000 tons of steel from the Carnegie Steel Co., to begin the work of building the four dreadnaughts which are being constructed by the navy itself. The keels had to be laid before July 1, or the appropriations would have elapsed. Little more work than necessary was done, however, as the navy experts have been busy writing war changes into the plans. It is now declared, however, that the navy will presently be in the market for the steel still needed for the four battleships it is constructing—about 60,000 tons. It is announced authoritatively that there will be no commandeering this time. The fact that two of the bids for the steel for the repair ship Medusa, building at the Puget Sound yard, cut slightly below the Industrial Board schedule of prices convinced the navy department authorities that they can go into the open market and get competitive bids as soon as the requisitions have been completed.

The other two battleships will be built by private contract. Only two of the six battle cruisers, however, are to be constructed by the navy—both at the Philadelphia yard. So far the final amendments in the plans for these have not been made, but instead of 35,000 tons displacement, it is expected that as the result of war experience, the department will increase these to 40,000.

Preliminary contracts for armor plate for the government built dreadnaughts have been made out to the Carnegie Steel Co., Midvale Steel and Ordnance Co., and Bethlehem Steel Co.—for approximately one battleship each. The remainder of the amount needed will

be allotted later after the companies have secured their allotments from the private shipbuilding companies. The prices to be paid were worked out practically by agreement with the representatives of the armor plate producing companies. Each schedule calls for 8637 tons A1 belt armor, at \$520 per ton; 495 tons A2 turret armor at \$581 per ton, and 953 tons B horizontal armor at \$555 per ton.

The Navy Department is hurrying work on the Charleston, W. Va., armor plate plant, but it is doubtful whether it will be producing before 1921. It probably will furnish some of the plate for these ships, but not until they are nearly completed.

The awards for the steel needed for the Medusa, the Navy Repair Ship No. 1, which is to be built at Puget Sound, were divided among three companies. The largest share went to the Youngstown Sheet & Tube Co., which is to deliver 4,011,660 lb. (1344 gross tons), of rectangular shapes for \$106,309, and 59,000 lb. of additional shapes (27 gross tons), at \$1719.85. The Jones & Laughlin Steel Co. was awarded a series of plate contracts aggregating 1,937,240 lb. (864 gross tons), at \$53,373.07. The Carnegie Steel Co. received the contracts for a series of minor items of plates, shapes, bars and halfround steel at prices ranging from 2.35c. to 2.65c. per lb., aggregating 2,175,500 lb. (971 gross tons), at a total of \$53,226.25.

Not in the Market for Steel for Commercial Ships

WASHINGTON, July 22.—So far as its commercial ship construction program is concerned, the Government does not expect to be in the market for additional steel. This is the authoritative statement of J. L. Ackerson, general manager of the Emergency Fleet Corporation. Mr. Ackerson said it was possible that some of the shipyards with Government contracts might need new steel, but even this did not seem likely to him.

"The Emergency Fleet Corporation is carrying out the program for which contracts have been let and does not expect to buy any more steel," said Mr. Ackerson. "All we need has been contracted for.

"If we let any new contracts they will provide that

the companies furnish the steel. We hope that those companies will have the steel on hand by reason of having ordered it for other ships on which the contracts were canceled. Any new contracts will be for larger types of ships, and it is possible that some of the builders will need additional steel. But we won't buy it for them."

The shipping program as worked out while the war was in progress provided for enough construction to keep the shipyards of the country busy through the year 1920. Those contracts were awarded and such steel as needed contracted for. The Emergency Fleet Corporation now has a vast amount of surplus materials on hand, including steel in various stages of fabrication as a result of the cancellation of contracts. Some of this surplus probably will be absorbed if new contracts are let.

Contracts Canceled

Since the armistice was signed, ship contracts have been canceled right and left. Altogether, contracts have been canceled or suspended for 754 ships aggregating 3,797,825 deadweight tons, which would have cost \$797,564,276. It has been estimated that the cost of canceling the contracts was about \$202,853,456. On that basis the hypothetical saving would be \$594,710,820.

It was the policy of the Shipping Board to cancel contracts wherever it seemed cheaper to do so than to complete the ships. This was particularly true of the smaller types, which were not considered suitable for the permanent American merchant marine. The experts of the Shipping Board and the Emergency Fleet Corporation—the construction branch of the board—have been at work ever since the armistice "balancing the fleet," deciding what types were needed and what types should be discarded. In some cases, suspended contracts may be reinstated, if it is found advisable, and a number of contracts for larger cargo carriers may yet be awarded. No new contracts will be let, however, it is declared, except in line with the present policy of "balancing the fleet."

The Building Program

Not counting those for which the contracts have been canceled or suspended, the ships which have been built or will be built under the present program total 2434, with an aggregate of 13,885,106 deadweight tons. The amount expended and contracted for in ship construction only, excluding expenses of administration, totals \$2,861,755,570. This indicates an average cost to the Government of \$206 a deadweight ton. It is estimated that the shipbuilders paid back to the Government in excess profit taxes an average of \$25 a ton, which would make the net cost, according to calculation of Chairman Hurley, about \$180 a ton. Some of the sales of ships, however, have been made at about \$210 a ton.

During June, 118 vessels, with a total of 756,583 deadweight tons, were delivered to the Shipping Board. This is more than twice the tonnage delivered in June, 1918, when the deliveries totaled 280,400 deadweight tons. During the year 1917, 49 ships were delivered, most of them having been requisitioned on the ways in various stages of completion. These aggregated 301,809 deadweight tons. In 1918, 410 steel vessels were delivered, with an aggregate deadweight tonnage of 2,570,077, in addition to 10 composite ships of 37,500 tons and 106 wooden ships of 376,400 tons, a total of 526 ships with 2,983,977 tons. The total number of ships accepted by the Shipping Board from August, 1917, to June 30, 1919, was 1047, with a deadweight tonnage of 5,826,664, or 3,884,443 gross tons. This leaves a total of 1384 ships contracted for and which on June 30 had not been delivered. The ships still to be completed during 1919 and 1920, under this program, aggregate 8,058,442 deadweight tons.

Radical Change Not Expected

No radical change in policies is anticipated as a result of the resignation of Chairman Hurley of the Shipping Board and president of the Emergency Fleet Corporation. John Barton Payne, who succeeds him, probably was recommended by Mr. Hurley himself for

the post. Mr. Hurley and Mr. Payne both have their homes in the same suburban county outside Chicago. Mr. Hurley was instrumental in the first place in bringing Mr. Payne to Washington, at the beginning of the war, as general counsel for the Shipping Board and the Emergency Fleet Corporation. Then Secretary McAdoo of the Treasury commandeered him as general counsel for the Railroad Administration. Mr. Payne has carried out most of the work for which he was appointed on the Railroad Administration, but has severed his connection with his Chicago law firm, and has made his home in Washington. He will succeed Chairman Hurley Aug. 1.

O. F. S.

Government Sale of Steel and Machines

Sealed proposals will be received up to 1.30 p.m., Aug. 4, by the Bridgeport, Conn., District Salvage Board, office at 945 Main Street, for steel scrap and new machinery still uncrated, as well as electrical and miscellaneous plant equipment. Among the scrap items listed are the following: Four lots, each of 179 tons of cold-rolled steel, $\frac{3}{4}$ -in. round, length 12 ft., at the Wire Wheel Corporation, East Springfield, Mass.; two lots, each of 171 tons of hot-rolled 2-in. round bars, 10 to 12 ft. long, at the Whiting Mfg. Co., Bridgeport; two lots, each of 178 tons of cold-rolled steel rod, $\frac{1}{2}$ -in. round, 12 ft. long, at the Corbin Screw Co., New Britain, Conn. The machinery consists of: 48 milling machines, 47 drills, 26 grinders, 9 straightening presses, 9 lathes, 9 screw machines, 3 profilers and 5 tapping machines.

Through the Detroit office in the Book Building steel scrap at the American Car & Foundry Co., Detroit, will be offered as follows: 3635 net tons of $5\frac{1}{4}$ -in. square bar stock for 155 mm. forgings, bids to be in by 11 a.m., July 29; 98 tons square hot-rolled bar stock for 10-in. plugs, bids to be in by 11 a.m. July 30; 343 tons of round 10-in. nose plug stock hot rolled bars, bids to be in by 11 a.m. July 31; 102 tons of round hot-rolled bar stock for 10-in. fuse plugs.

Through the St. Louis office in the Missouri State Life Building the following scrap will be offered: 529 gross tons of ingots for forging 8-in. common steel shells, at the American Steel Foundries, East St. Louis, Ill., bids to be in by 3 p.m. July 25; 842 tons of ingots for forging 9.5-in. common steel shells, at American Steel Foundries, Granite City, Ill., bids to be in by 11 a.m. July 29; 74 tons of shoveling steel scrap at Wagner Electric Mfg. Co., St. Louis, bids to be in by 11 a.m. July 30; 476 tons of speigeleisen at the Scullin Steel Co., St. Louis, bids to be in by 10 a.m. July 29.

Through the New York office at 1107 Broadway there is offered 459 tons of cold-rolled steel bars, at the John Thomson Press Co., Long Island City, bids to be in by 11 a.m. July 25.

New Carnegie Band Mill

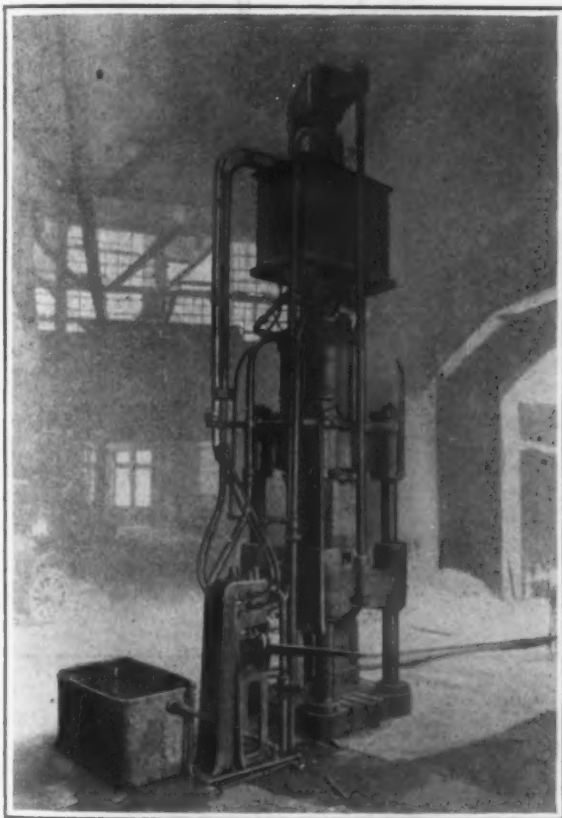
YOUNGSTOWN, OHIO, July 22.—The Carnegie Steel Co. will add an 18-in. band mill to the McDonald works, Trumbull County, starting foundations Aug. 1. Contracts for the mill have been awarded the Youngstown Foundry & Machine Co. Plans are being developed for the addition of other units at McDonald and are now being worked out by the engineering department under F. E. Kling, chief mechanical engineer of the company in the Youngstown district. Four mills are now operating at McDonald, 8-in. and 10-in. bar mills and two 8-in. hoop mills. The plant is entirely electrically operated, power being generated at the Ohio works by engines using gas from the blast furnaces. The current is carried to the transformer station at McDonald over a steel tower line five miles long. Original plans called for nine mills at McDonald, but the war delayed progress on the plant.

The Penn Trojan Powder Co. is arranging plans for the establishment of a model town in the vicinity of its works, near Allentown, Pa. The former Lichtenwalner farm, comprising about 100 acres, will be used in connection with the development.

Piercing Press Modified for Forging

In order to utilize standard piercing presses for general forge work in smith and forge shops, the Southwark Foundry & Machine Co., Philadelphia, has designed a single lever high speed valve control. A low pressure filling tank is also provided, thus to make these high speed pressures economical in operation.

The low pressure filling tank is located on top of the main cylinder, to which is attached a special casting forming the bottom of the filling tank. This tank bottom is provided with a large low pressure filling check valve. In order to reduce the overall height of the press, the pullback is located inside of the filling tank. The main cylinder, the pullback cylinder and low pressure filling check valve are all operated by the one lever. By moving the operating valve lever from its neutral position slightly downward, the pressure water from the pullback cylinder is exhausted, the low pressure filling valve operating the main cylinder is lifted so that when the moving platen descends, low pressure water from the tank fills the main cylinder until the die comes in contact with the forging. Immediately after this, the valve lever is moved still further, allow-



Standard Piercing or Drawing Press Converted Into Quick-Acting Forging Press for General Forging Work. It is equipped with high-speed valve control

ing the high pressure water to enter the main cylinder, doing the actual forge work with the full capacity of the press.

By raising the valve lever, the filling check valve is opened, pressure is applied to the pullback cylinder, which will return the moving platen of the press, exhausting the water from the main cylinder back into the filling tank, while the additional volume of water which has been used from the high pressure system, will pass through the overflow pipe from the tank back into the suction tank of the pump.

The manufacturer states that a 350 ton press in operation in the company's shop on general forging work makes from 25 to 30 full capacity working strokes per min. and from 50 to 60 light working strokes per min., by using only the operation of the pullback cylinder, that is exhausting the water from the pullback quickly, using the weight of the moving parts of the press for swedging work.

It is pointed out that this type of press will require a comparatively small size accumulator, while the pump

capacity will be equal to the water quantity used for the short high pressure stroke for a certain number of strokes per minute.

Electric Air Compressor for Tires

An air compressor unit for inflating automobile tires and operating on the lighting circuit is announced by the Black & Decker Mfg. Co., Baltimore. A two-piece housing encloses the motor, the gear train and the compressor cylinder. In addition the housing forms an air jacket. A centrifugal fan on the armature shaft of the motor draws air in through the ports in the commutator end cover, circulates it through the motor and the compressor cylinder and out through ports under the cylinder head.



Air Cooled Compressor for Tires

The motor develops $\frac{1}{4}$ hp. and operates on direct or alternating current, 25, 40 or 60 cycles. The motor is mounted in the housing with air space between the outside of the stator or field, and the housing, so that the air circulates all around the windings. The commutator end cover may be removed for inspection or adjustment of brushes without interfering with the operation of the motor.

The smallest size machine has a rated capacity of 2 cu. ft. of free air per min. The manufacturer states that it will inflate a 34 x 4-in. tire from flat to 80 lb. in about $1\frac{1}{4}$ min.

Stove Manufacturers at St. Louis Are Busy

ST. LOUIS, July 22—Local stove manufacturers are looking for an unprecedented fall business. St. Louis is the largest stove manufacturing center in the United States and the rush of orders already is keeping factories working night and day.

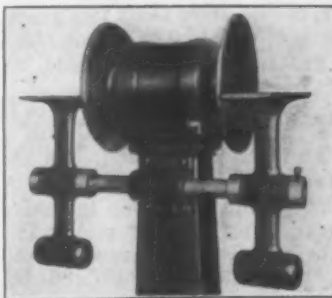
The chief reason for the strong demand is the fact that consumers who were forced to keep their old stoves in commission during the war, when raw materials were unobtainable in quantity, now are demanding new stoves of the retailers.

"Prices of raw materials have advanced 70 per cent over the pre-war prices," said W. A. Lockwood of the American Stove Co. "We are increasing our stocks in all lines, but it is extremely difficult for us to fill our orders. Our greatest fear is that we may face a shortage of cars to transport raw material."

G. L. Bridge of the Bridge & Beach Mfg. Co. says the greatest difficulty of his company is manufacturing fast enough to supply the demand. J. T. Templeton of the Buck's Stove & Range Co. states that his company is now working its limit of production.

Double Disc Grinder

A new disk grinder is announced by Forbes & Myers, Worcester, Mass. The steel disks are 12 in. in



Grinder with Two 12-In. Discs

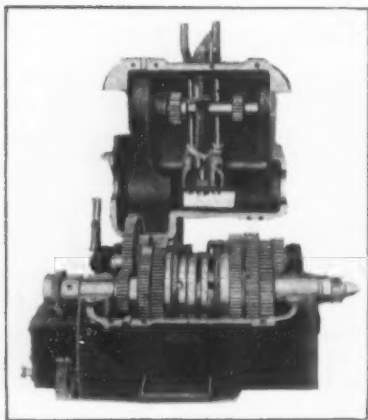
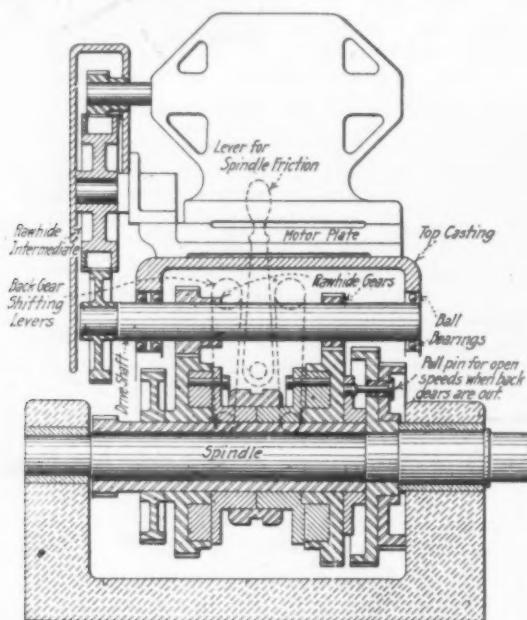
diameter and have a speed of 1800 r.p.m. The tables are swinging but can be held stationary by set screws.

The motor is rated at 2 hp. and is fully enclosed. Heas-Bright ball bearings are used, packed with grease, and protected from dust or grit. The grinders can be supplied for 2 or 3-phase current at 25 or 60 cycles and for any of the ordinary voltages.

Geared Head Lathes

Lathes with geared heads for either belt or motor drive are announced by the Cisco Machine Tool Co., Cincinnati. The geared head on the belt-driven machine has a double friction countershaft, one friction running 300 r.p.m. and the other 130 r.p.m. The 300 r.p.m. friction has control of 10 spindle speeds, 300 and 200 with back gears out, 214, 146, 116, 78, 54, 36, 29, and 19 with back gears in.

The 130 r.p.m. friction has control of 10 spindle speeds, 130, and 88 with back gears out and 93, 63, 50, 34, 23, 15, 12, and 8.5 with back gears in. There are four levers, including the back gear lever, required for these changes. One handle controls the friction on the spindle and two handles control the shifting of four back gears on the eccentric shaft. A pull pin in the face gear is used to run straight from the spindle when the back gears are out. The eccentric shaft lever or back gear lever meshes back gears with spindle



This Geared Head Lathe Has a Double Friction Countershaft, Each Friction Providing Ten Spindle Speeds. All speeds are controlled by four levers. A motor can be attached to drive through a rawhide intermediate stud

gears. On the spindle are a friction and six gears, on the back shaft four gears, on the drive shaft two gears, all gears and spindles being of 0.40 to 0.45 carbon steel. Except the drive shaft gears, which are rawhide, all geared heads have ball bearings.

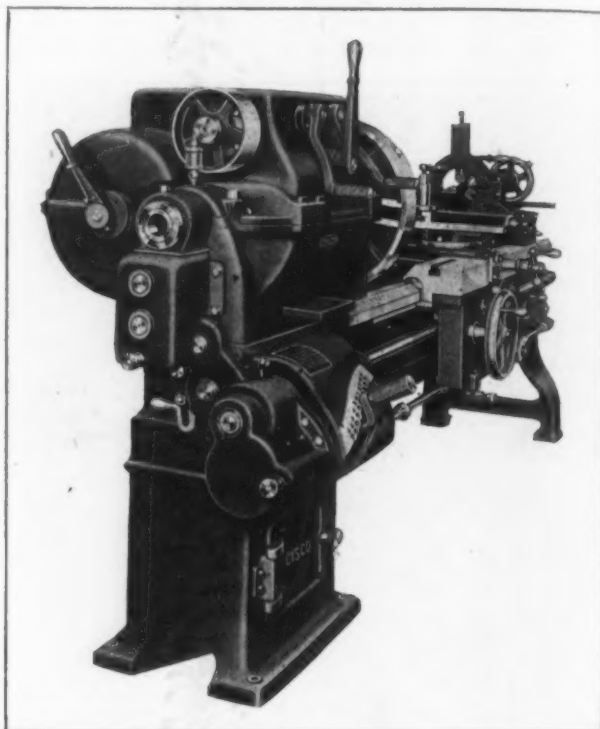
In applying the motor to the geared head a plate is placed on the top of the regular geared head with a bracket on the plate for an intermediate stud. On the intermediate stud is a rawhide intermediate gear. A pinion is placed on the motor and a gear on the drive shaft, both pinion and gear being made of steel. The gears are covered and the spindle speeds are 220 and 150 r.p.m. with back gears out and 152, 107, 86, 58, 40, 27, 21, and 14 with back gears in.

The lathes are made in four sizes, 14, 16, 18 and 24-in. For motor drive, these lathes require a 2½, 3,

5 and 7½-hp. motor respectively. The manufacturer specifies a General Electric motor at 1700 r.p.m. for direct current or a Westinghouse motor at 1800 r.p.m.

Rust-Proofing Coatings for Iron and Steel

WASHINGTON, July 22.—The Bureau of Standards has issued a circular on a series of investigations concerning metallic coatings for the rust-proofing of iron and steel. The Bureau has studied a long series of methods to secure this result by means of metallic coatings, paints, lacquers, varnishes and enamels. The circular deals with the various types of metallic coatings, including those closely related in their nature and method of production, oxide and similar coatings. The methods of application and characteristics of the different metallic coatings are discussed, and it is shown that zinc, because of its electro-positive nature with respect to iron, is the one to be relied upon when protection against corrosion is the prime consideration. Other



considerations, such as freedom from toxic effects in food containers, often lead to the choice of some other metal than zinc.

The circular discusses the structure and uniformity of distribution of the different classes of zinc coatings and their bearing upon the behavior in service. Of the various methods which are used for the testing of coated materials, the "salt spray" test is regarded as the most satisfactory. The articles to be tested are exposed to a fine mist of saturated salt solution and the length of time they withstand this severe exposure is a fair index of the service life that may be expected for the specimen. This test, while not entirely satisfactory, is the best which has yet been suggested, says the report.

A series of recommendations concerning the choice of protective metallic coatings for various types of works is given, together with a good working bibliography of the subject.

The unionization of engineers on a large scale is predicted in the *Chicago Daily News* by Anthony J. Oliver, president International Federation of Technical Engineers, Architects and Draftsmen. "We have 5000 men in our body," he says, "and before the end of a second year we expect to have three times that number." The organization is affiliated with the American Federation of Labor.

TIN PLATE DEMAND

Mills Working Closer to Capacity—Displacing War-Time Substitutes

A meeting of the Association of Tin Plate Manufacturers, which includes practically all the independent mills, was held at the William Penn Hotel, Pittsburgh, on Friday, July 18, and was largely attended, 24 tin plate companies being represented. E. T. Weir, Weirton Steel Co., was in the chair, and George D. McIlvaine was secretary. Reports from the various producers indicated that the independent tin plate mills are operating at present close to 85 per cent of normal capacity, and this would be larger except for the scarcity in labor, both common and skilled. A heavy increase was reported in domestic and also in export demand for tin plate and makers regard the outlook for the remainder of this year as very satisfactory. A committee was present from the Sanitary Can Manufacturers Association, and reported that demand for cans at present is heavy, and several plants are operating night and day. At the recent meeting of the Metal Branch of the National Hardware Association, held in Pittsburgh, a committee was appointed to confer with the Association of Tin Plate Manufacturers regarding several matters of interest to jobbers, but this committee was not present and has not yet asked the Association of Tin Plate Manufacturers for a conference.

From reports made by the makers of tin plate at the meeting it is very evident that some of the large canners underestimated their needs for tin plate this year, and are now urging the mills to make as prompt shipments as possible, in view of the heavy demand for cans. During the war a ruling was made that tin plate could not be used in the manufacture of containers for certain purposes, and wood, fiber, glass and other products were used in the manufacture of containers in place of tin plate. Now that the war is over, the tin plate manufacturers have decided on propaganda urging a return to the use of tin plate for the manufacture of containers in place of the other products employed during the war. The spread of this propaganda has already been started by the use of large posters which are being put up in the mills of the independent manufacturers, and other posters will be put up from time to time.

More Violence at Worcester

WORCESTER, MASS., July 22—The strike of the molders at Worcester is now on its tenth week. With the exception of the plant of the L. W. Pond Foundry & Machine Co. and the Star Foundry, all of the foundries are operating, several of them with normal working forces. But the striking molders have not returned to work, their places having been taken to some extent by men secured in Worcester, but mostly by molders from out of the city. In several plants the workers live in the buildings. In the others they are escorted to and from their employment by the police. Assaults have been common. One such was on a boy employed in the drafting room of the Coppus Engineering & Equipment Co., and Frans H. C. Coppus, head of the business, has offered a reward of \$500 for information leading to the arrest of the assailant.

The strike of the 1500 employees of the Graton & Knight Mfg. Co. is still on, the works being closed down. The direction of this strike has come into the hands of a group of radicals of alien birth and not American citizens, and their control is one of threat and violence. The company through the local press has invited its employees who wish to return to work to communicate with the office by mail, and when a sufficient number so indicate their desire to resume their employment the factory will start up again. As a result of serious assaults by strikers on those who refused to leave their jobs, a number of arrests have been made, and long jail sentences were imposed. In every case the assailant was a foreigner, unnaturalized. Some 500 employees of the wire mill of the Palmer, Mass., plant

of the Clinton-Wright Wire Co., Worcester, went on strike last week, demanding a 20 per cent increase in wages. The company declined to treat with the strikers and no concessions were made. More than 300 of the men, who are practically all Poles, have returned to work, and the plant is running as usual.

Government Steel Surplus Increasing

WASHINGTON, July 22—Details of the surplus iron and steel on hand in the War Department reveal that the amount to be sold is still increasing. New adjustments of contracts have brought the total to 883,166 tons. Less than 40,000 tons of this is itemized as scrap, but it is likely that a much larger share will have to be disposed of as scrap, instead of as finished and semi-finished material. The June sales were less than 80,000 tons. No estimate is available concerning the July prospects. Almost all of the iron and steel surplus is in the hands of the Ordnance Department, the amounts held by the Aircraft, Purchase and Storage and Signal corps divisions being relatively small.

Each of these bureaus is responsible for the disposition of its own surplus, under the supervision of the Director of Sales. Prospective purchasers, however, can secure information concerning all materials by direct application to the Director of Sales, Munition Building, Washington.

American Erectors May Rebuild Rumanian Bridges

In order to re-establish at the earliest possible moment communication on its trunk railroads over the great rivers in Rumania, the Rumanian Government has sent to the United States, under the direction of its embassy at Paris, the Rumanian Bridge Commission, now at the Cumberland Hotel, Broadway and Fifty-fourth Street, New York. In addition to the Borcea bridge at Cernavoda across the Danube River, the Siret bridge at Cosmesti, the commission is seeking to reconstruct 24 smaller bridges, totalling 1005 meters in length, in all about 25,000 metric tons of bridge material.

Acting on the assumption that German occupation in that country was to be permanent, German engineers in many cases had made temporary repairs and had even fabricated a large part of the material for restoring fallen spans on the more important structures. The commission states that informal proposals have been made by German engineers to furnish about 2700 tons for the restoration of the single-track Borcea bridge, of which already 2000 tons is manufactured and awaiting shipment at German plants. Similar progress had also been made by the Germans for restoring the Siret bridge. No consideration, it is said, is being given to the proposition of making use of the fabricated structures in Germany, and it is the intention to place this business in Allied countries. The need of rapid reconstruction has prompted the commission to approach American contractors for the reason that they offer, by reason of the well-known rapidity of American erectors, the greatest promise for a prompt relief to the more or less paralyzed transportation conditions in Rumania. Contracts have not yet been placed, however, on account of difficulties in arranging credit matters, it being necessary that contracting parties finance their own work.

Offers have been received from two British companies to complete the work in two years, but it is pointed out that this time can be equalled by the Rumanian shops. The commission states that at Resita Montana there is available the former Hungarian Government Railroad steel and fabricating plant, comprising blast furnaces, rolling mills and shop facilities, and that at Arad, in Banat, are also adequate car and fabricating shops. It is estimated that one metric ton of structural material will cost, delivered in Rumania, from 200 to 240 lei (par 1 franc). Prior to the war construction work of this kind cost, complete in place in Rumania, from 350 to 500 francs per metric ton. No attempt is made by the commission to give

close estimates of the cost for such work to-day, no gage of past performances holding under the present abnormal conditions in Rumania.

In restoring the single-track Borcea bridge it is planned to make it double-track and highway combined, plans calling for three 140-meter main spans, requiring 8000 metric tons, and 11 viaduct spans of 55 meters each, requiring 4000 additional tons, or 12,000 tons in all. The Siret River bridge, 475 meters in six spans of 69 to 76 meters, the Oltul River bridge of

about 355 meters in seven spans of 47 to 56 meters, and the Arges River bridge of 330 meters, single-track, in seven spans of 40 to 50 meters, constitute the principal work under contemplation, in addition to the smaller ones enumerated above. The total length of bridge work under consideration comprises, therefore, 1500 meters double-track and highway and 1700 meters single-track.

The commission is composed of C. Nicolescu and C. Cihodariu. Ion A. Beles is the engineer.

Light on the German Iron and Steel Industry

Meeting of the German Iron and Steel Institute
—War Conditions and Peace Time Labor Troubles

A GERMAN view of the stipulations of the peace terms, a look into the war time conditions of the iron and steel industry, and the labor obstacle to a quick resumption of peace time operations, are contained in the report of the May meeting this year at Düsseldorf of the Verein Deutscher Eisenhüttenleute. From a translation of the report, prepared by Sir Robert Hadfield, Hadfields, Ltd., Sheffield, England, the following main points have been taken:

Reference to Peace Terms

President, General-Director A. Vögler, in his opening speech, said: "When we sent out these invitations to the meeting a few weeks ago, the peace terms were not known to us. The foreign press had painted in very gloomy colors what it was intended to impose on Germany. In many circles of the population the conviction was apparent that the peace of President Wilson had only been held out to Germany in order to disarm her and then force her hand.

"But when we now see what has been prepared for us—I would only call your attention as a metallurgist to the fact that the Saar Basin and Upper Silesia are to be taken from us—we search in vain in human language for an epithet capable of summing up the brutal inhumanity which there is in these so-called peace terms. (Quite right!) What it is desired to impose on the German nation as a just peace is nothing more or less than concealed annihilation. (Quite right!) A nation of seventy millions will never suffer that patiently, will never sign its own death warrant. When the peace negotiations begin, the other side may do well to remember that hate, a base craving for revenge and the common spirit of plunder are bad counsel. (Bravo!) We can only hope that we may be able to bear what emerges from the peace treaty. The dream of German greatness, we know, remains a dream. But we demand that sufficient should be left to us to make life still worth living, and to make it reasonable for us to consider the work of the immediate future."

The report of the work in 1918 mentioned that in spite of the war, membership increased from 6155 to 6443. The following few paragraphs cover other features of the report:

War Time Obstacles

The coal supply, which was a matter of great difficulty even in the last year or two of the war, has recently suffered to a considerable extent owing to decreased output of the miners, the stoppage of further undisciplined bodies of labor, transport difficulties, etc.

The difficulties attending the provision of the steel works with magnesite and magnesite bricks have continued to increase and have reached a stage which is causing grave preoccupation, owing to the Austrian sources of supply being unable to deliver through shortage of coal. The situation has been slightly relieved by importing crude magnesite, which was afterwards burnt in our own works.

Owing to the shortage of leather, recourse had often to be had to the use of cellulose, although the industry at first evinced considerable opposition to its use. The

results were, however, generally speaking, found to be satisfactory.

Technical Education

The colleges must more than ever take a share in public life. The theories, or rather the principles, of our economic life, of the driving forces and the relations of our industrial life, must permeate all branches of instruction. Traffic and transport questions, a knowledge of economics and of men, must become the foundations of instruction. In the mind of the student must be awakened a profound understanding of the necessity for steadily striving to attain the maximum efficiency in all walks of life. If this should involve a curtailment of special knowledge, we shall not regret it. One-sided specialized training has already been carried much too far with us, and when the technical men complain—and rightly so in view of their importance—of disregard at the hands of the general management, one of the principal reasons is to be found in the one-sided development of specialized knowledge.

Our present and future economic position fore-shadows still stricter economies in the use of fuel such as is available for our metallurgical works.

The president began his annual report with these words: "After a hard struggle extending over a number of years, the German people lost their powers of resistance, the will to victory, and therefore, the great war. After an ascent to power which is unparalleled in history, came a collapse such as the world has seldom witnessed. Of the proud economic structure of the German Empire only the bare walls remain, the iron industry in particular being hard hit."

Development of Pig Iron Production

In the seventies of the last century, the president continued, German blast furnaces produced 1½ million tons of pig-iron. There was no room for great industries in the agrarian State of the German nation, which was politically torn asunder. It was only when the Empire was founded that the iron industry was able to develop. It did grow unceasingly from year to year, showing magnificent results. In 1913-14 the blast furnaces produced about 20 million tons, or about seven-tenths of the total pig-iron production of Europe. At the same time the consumption of pig-iron increased from 48.4 kg. to 277 kg. (106.5 to 609.5 lb.) per head of the population—a proof of the fact that the industry of complete and worked-up products also participated in the successful development. The magnitude of the development on the technical side of the iron works is shown by the fact that the annual output of the blast furnace worker increased from 7 tons to 410 tons of pig-iron.

Bureaucracy and Industry

Then came the war. First of all there was a tremendous set-back in production, and a great shortage of labor in the works. The responsible authorities failed to appreciate that iron, and a great deal of it, was necessary for the conduct of the war. The demands went on growing, yet in no phase of the war did the German iron industry fail; it was always possible

to meet the requirements of the army and navy. By untiring and self-sacrificing work, in which every one gave of his best for the majority, maximum outputs were obtained at the works. This fact the industry may record with satisfaction. Reproaches such as the "high treason of the heavy industry" show, in face of what is just said, how low we have fallen at the present time. (Quite true!)

And these outputs were obtained, let it be remembered, under very trying circumstances. There was a shortage of raw material at the furnaces and at the steel works, while unskilled labor was being employed in the whole of the works, and substitute materials in nearly every department of them. Added to this was the fact that the war organizations continually meddled with the internal arrangements of our works. To such an extent has this fatal superstition of the organizing talent of the bureaucracy been carried. Whenever the available forces were unable to cope with the heavy demands, a host of officials, mostly non-professional people, tried to work a miracle. When the history of this lost war comes to be recorded, a part of the blame, and no small part, must be attributed to our "over-organized" industry. (Quite true!)

Furthermore, technical questions in every field were treated in dilettante fashion. In vain the chosen leaders raised their voice in admonition. I would recall here the repeated petitions of the Society of German Engineers. As the president, Dr. von Reippel, told me, they were scarcely ever answered, if at all, and they certainly were not considered. It is a recognized fact that it is the officer who leads in battle; but it does not seem to have been recognized in wide and authoritative circles of our Government that important technical problems can only be satisfactorily dealt with by technical men. (Quite true!)

Labor and Socialization of Industry

Now the war is lost, and German industry practically a heap of ruins. We must start rebuilding at once, lest total destruction overtake us. I should like at this juncture to express the hope that works will continue to co-operate in peace as they have done during the war. We are all growing more and more conscious of the fact that carefully guarded works secrets only bring advantage in rare instances, and that, therefore, the greatest advantage for every works, and consequently for the majority, lies in the direction of interchange of experience.

Now great multitudes of our workers are urging for greater participation in these results. We are quite willing to take account of this desire, and we wish to consider in common just how the workers can best be interested in the prosperity of the works.

Quite recently an extremely valuable work has been published by Privy Councillor Deutsch on the relation of the so-called capital-profit to wages. He took some sixty-six companies engaged in the most varied industries and having a capital of about 2,500 million marks, and then showed the relation of the so-called profit on capital to wages paid. I wonder whether the working classes would so eagerly answer the call to class-warfare if it had been explained to them at the right time that, even if the whole of the gains were given to the working classes, this would only result in a rise of wages of 11 pfennigs per head per hour, or 270 marks per annum? This one example is sufficient to show how far from the truth all speeches are regarding the exploitation of labor by capital—in Germany, at any rate.

In the present ferment all efforts to bring enlightenment to the masses have met with but little success. Capital regards with consternation the fact that in this decisive moment of our economic life, where the salvation of industry—and, indeed, of the country—lies in the close co-operation of all labor and, unfortunately, a part of the body of officials too, are attacking it. Now at the decisive moment, when leaders on both sides realize that common work is necessary and that in it alone lies our salvation, we find all sections repudiating their leaders.

We shall have to form joint bodies of employers and employed at our works, those bodies working together to form a solid union. Endeavors should there-

fore be made if possible to meet the workmen in their desires in the direction of responsible co-operation. There must, indeed, always be leaders and followers, but we must sweep away the delusion that has persisted that one class believes itself to be working for the other class alone.

In the time that is coming our iron industry in particular will be faced with grave problems. One of the most important of these will be the provision of iron and steel for the industries which consume these metals, having regard to the loss of such vast productive regions. In this connection we shall have to proceed in the direction of improving the quality of our products to a greater extent than hitherto. We shall have to make up for the decrease in production by more intensified working, if we are to retain our valuable labor forces. We ought really not to speak so lightly of the emigration of our fellow-countrymen. We have in truth lost enough of the best of our mankind in this most devastating of all wars. We ought to strain every nerve to see that these losses are not added to. All ways and means must be tried so that we do not lose more men, especially when we remember that it is not the worst men who emigrate.

Increase in Production Urged

As an immediate means for correcting present abnormal commodity prices and reducing the period of excessive war debt taxation, resolutions unanimously adopted by the board of directors of the National Association of Manufacturers at a meeting in the general offices in New York, Friday, July 18, urge public support of an effort to greatly increase the industrial production of the country, pointing out the growing tendency to restrict production on the theory that the less work a man does the more work he provides for others to do.

The resolutions declare that much of the industrial antagonism which exists between employers and employees is based on the unjustifiable and systematically fostered belief among the people that the manufacturers of the country are mainly responsible for the levels which prices generally have attained. Attention is also called to the fact that heavy war debt taxation has contributed heavily to present high prices and increased productiveness is described as an effective means of shortening the duration of war tax burdens now imposed on our industries and the individual citizen.

Factory workers are called upon to lend their aid to the manufacturers to the end that factory production may be immediately increased, as a way of restoring reasonable and more normal price conditions. Legislative authorities, the press, the churches and educational institutions are also urged to give their co-operation to the movement for increased production as a means of relieving oppressive and economically unjustified present living conditions.

Pipe Mills Very Busy

YOUNGSTOWN, OHIO, July 22.—Sales managers of district companies say it is no longer a question of selling output, but of filling orders. Pipe orders continue to roll in, pipe departments being heavily oversold. Heavy foreign demands for reconstruction material are entering the market, adding to the rapidly growing domestic requirements. Orders from South American countries indicate revival of business in those republics. Activity, long dormant, in the building trades, is shown in the inquiries for structural iron and steel, shapes, roofing and formed products and sheets.

The performance of a heating furnace utilizing a fuel composed of pitch and creosote is reported in the engineering supplement of *London Times*. Two tons of steel billets were heated in 55 to 60 min. to 2000 deg. Fahr. using about 16 gal. of the fuel per hour. The internal size of the furnace is 10 x 5 x 3.5 ft. Equal weights of creosote and pitch form the mixture, which is kept at a temperature of 180 deg. Fahr., and, strained through a wire gauze strainer of 40 meshes to the inch, is pumped through an injector type of burner.

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Steel Price Basing Points

The Federal Trade Commission will have its hands full if, as now seems probable, it undertakes to decide whether there should be other price basing points for steel products than the single Pittsburgh basing point that has ruled for so many years. For a convenient illustration of one of the issues at stake, there has been some discussion in the wire nail trade as to the reasonableness of the card differentials over the base price, it being asserted that they do not cover the cost of manufacture over and above the cost of making base sizes. Should the Federal Trade Commission undertake to recast the nail card, it would have to do so on the basis of relative costs, but having done so it would be leaving untouched the much more important matter of the reasonableness of the base price itself.

One case would bring on another. Thus, should the Trade Commission undertake to determine what is a fair Chicago price relative to the Pittsburgh price, it could be asked to inquire into the reasonableness of the Pittsburgh price. Should it be drawn into consideration of the cases of steel consumers drawing their supplies from Birmingham, from Buffalo, from Pueblo and from eastern Pennsylvania, it would not be far from exemplifying such Government price control in steel as, much to the surprise of many, was advocated by Judge Gary on June 2, 1911, on the occasion of his testifying before the Stanley committee of the House of Representatives. For this the Trade Commission can hardly be thought to have the authority. But the question to be determined, presumably before the investigation of the price basing point matter is entered upon, is where the commission's authority begins and ends.

The Western Association of Rolled Steel Consumers, in its complaint filed with the Federal Trade Commission against the United States Steel Corporation and other producers of steel in the Chicago district, charges that they are adding \$5.40 per net ton, which is the freight from Pittsburgh to Chicago, to what the petitioner considers are fair prices for finished steel; further, that they are selling their products to buyers in the territory be-

tween Chicago and Pittsburgh at mill prices less than those charged buyers in the Chicago district; also, that these steel companies sell to certain agricultural implement manufacturers and to some other purchasers in the Chicago district at lower prices than are charged the members of the association. The crux of the complaint is that these alleged discriminations "substantially lessen competition and tend to create a monopoly in the said line of commerce," also that they "are made by agreement or understanding amounting to agreement between the respondents or between respondents and other producers of steel in order to maintain prices of rolled steel." This last allegation would seem to be the paramount issue in the case, since it charges a violation of the Sherman Act. It is certainly a far more serious matter than, for instance, the charge that Chicago district mills reach out for business in territory east of Chicago and absorb some of the freight in order to meet the competition of Pittsburgh mills.

The system of basing finished steel prices upon Pittsburgh plus rail freight to destination is one of very long standing. Both the steel producing works and the steel consuming works have been built up under it, in view of the large percentage of the country's steel output produced in the Pittsburgh district. That proportion declined noticeably from 1916 to 1917, but it was still large, being nearly 25 per cent for the district included in a 40-mile radius. Including the Youngstown district, which has much the same freights as Pittsburgh, the proportion in 1917 was fully 40 per cent. Thus the general district still occupies a position of first importance.

The Pittsburgh basis for steel products, however, rests more upon custom than upon inherent necessity. All steel has passed through the form of pig iron, but in the case of pig iron each producing district has its own market basis. It would be a radical procedure to eliminate Pittsburgh as the usual basing point for steel, but it would be still more radical to establish Pittsburgh or any other place as the sole basing point for pig iron. For nine months of the war—from Oct. 1, 1917, to July 1, 1918—Chicago was made a steel basing point along with Pittsburgh and the f. o. b. price

was the same for both. Later, Duluth buyers of steel agitated for Duluth basing. A few years ago there was some discussion of a Birmingham, Ala., basing. The steel producers themselves were responsible for occasional deviations from the Pittsburgh basing before the war, bars having been sold at times at the Pittsburgh price, f. o. b. Chicago mill. Some like departures from custom have been known in connection with Buffalo and Johnstown.

The matter now put before the Federal Trade Commission by the petition of the Chicago district consumers is highly complicated and its decision will affect in an important way all manufacturing consumers of iron and steel products. It is natural for buyers of steel to expect to derive advantages from proximity to important producing plants. The interests of steel producers would naturally be bound up to a degree with those of consumers in nearby territory, since any competitive conditions which would divert business from these manufacturing consumers would to the same extent limit the market of the steel producer. Formerly the determination of the competitive position was largely in the hands of the railroads, and steel producers themselves have at times invoked the interference of the Interstate Commerce Commission to change rates which deprived them of what they considered to be their share of the total business. It is easy to see that the question of freight rates, with which the Federal Trade Commission has nothing to do, may ultimately come into the present controversy.

If the result of the Chicago district consumers' complaint is the sweeping away of the Pittsburgh basing, as for years it has been commonly used by steel manufacturers in the various districts, the effect on the finished steel market would be fairly revolutionary. There could be no more counting on finished steel prices at mill than is now possible with pig iron prices and that would mean far-reaching changes in the competitive alignment of important steel-consuming interests. For that reason the parties in interest in the case now begun before the Trade Commission are not simply the Chicago district steel producers and the Western Association of Rolled Steel Consumers, but the producers and manufacturing consumers of steel in the entire country.

Steel Strike Improbable

It seems improbable that the 24 unions, more or less, whose representatives decided at last Sunday's meeting in Pittsburgh to take a vote as to striking in the steel industry will vote in favor of a strike, and still more improbable that such a strike would stand any chance of success.

As an illustration of the weakness of the position of these unions two of the formulated demands, widely separated in the program of demands as announced, may be set together for comparison and study. These two are:

Reinstatement of all men discharged for union activity and with payment for time lost.

Principle of seniority to apply in maintaining, reducing and increasing the working forces.

Undoubtedly, in the last analysis, the principle of main force would be invoked to decide whether or not it was for union activity that a man was discharged. The rule of seniority in discharge is a bait for the least efficient men to become most active in the union. A strike on this platform, if unsuccessful, would automatically tend to weed out the less competent quite efficiently. Workmen generally know approximately where they stand in the scale of competency, though they make no admission as to what their judgment is.

Abolition of physical examination of applicants for employment, as demanded in the program formulated at Pittsburgh, would contravene the whole principle of workmen's compensation. The employer must protect himself against placing in a job a man who from his physical condition would be likely to be injured in that job. The labor leaders who propose this point thereby admit that it is to labor's interest to be injured and receive compensation. The compensation laws are thus endorsed as being liberal—even profitable.

As to the demand of "increases in wages sufficient to guarantee American standards of living" the question may naturally be asked, where is this standard to be found? In proportion to hours and service the workmen in the steel mills are extremely well paid. In many other industries the common labor rate is lower than in the steel industry, which indeed stands at the top in this respect. The expression "American standards of living" is a mere play with words when applied to steel mill labor. No "standard" outside the steel industry could be found that would dictate wage advances within the industry.

The two demands cited above as to be studied in common suggested the weakness of the position of the labor unions that plan for the taking of a strike vote. Two other demands, set together, are equally suggestive of this weakness. These two are the establishment of the check-off, by which union dues would be deducted from the payroll, and abolition of company unions. Employers, in other words, are asked to make a vastly greater contribution to the success of the proposed steel mill labor union than are the men themselves. The inference might be that the men have been applied to in vain and recourse must now be had to the employers.

It should be said that the popular idea of the extent of any strike the 24 unions might bring on is apt to be in error, since 24 looks like a formidable number of organizations. The vast majority of steel workers are not members of unions. Apart from the Amalgamated Association, which has to do only with iron rolling mills and with sheet and tin plate mills, the unions represented in steel plants are those of blacksmiths, masons, carpenters, machinists, molders, electrical workers and various other auxiliary trades. Numerically, all such workers, union and non-union, constitute a small part of the total of iron and steel works employees, though at individual plants where mechanics in these trades might happen to be thoroughly organized a strike could cause the shutting down of other departments.

Chemistry in Steel Making

Not many years ago the production of a heat of steel was for the most part simply a melting operation and little attention was paid to the chemical reactions involved and their effect on the product. To-day conditions are radically different. There are several cases in point. Considerable has been heard recently, particularly in England, of the valuable influence of lime in the acid open-hearth bath. In its judicious use, certain important chemical reactions are involved which make for a more nearly perfect equilibrium between slag and bath and for a purer steel. Light on this phase of steel making is contained in an article on other pages of this issue. A proper relation between slag and bath is vital in all steel making but it is safe to say that even to-day this is often not appreciated, especially where the melter is not a trained metallurgist. The writer referred to advocates the importance of taking slag as well as metal samples and there is no doubt of the advantage of employing such practice when the chemical conditions are understood.

Another illustration is the recent recognition of certain chemical relations existing between the slag and steel bath, which make it possible to conceive manganese in the steel, so that there is a most important financial saving as well as a better steel.

The steel works mixer has not been generally regarded, at least in the United States, as a factor in the chemical purification of the metal concerned. It is used almost entirely as a mixing reservoir. But in *The Iron Age*, July 10, in an article from a German source is the statement that in Germany the chief purpose of the introduction of the mixer in Germany was as a desulphurizing agent. A discussion is presented of the chemical reactions involved and of the appreciable and economical removal of sulphur that is possible. In fact, the valuable inference is that the chemical principle involved is applicable to the basic open-hearth where sulphur removal is very difficult at present.

In perhaps no other connection has the role of chemical reactions been more prominent than in the electric furnace. Here purity of steel has been secured by taking advantage of the chemical reactions possible at the higher temperatures existing. In fact the principal incentive to a better recognition of chemistry in steel making in other processes should be credited to the electric furnace.

The importance of a recognition of chemical principles in making steel is conceded. But the best results cannot be achieved by mediocre talent. Present-day practice demands more and more the educated chemist and metallurgist as the actual steel maker and not the man who was once the stocker and then the helper or melter. Only a few years ago a large steel company insisted that the melter should be the head of the steel making department. But to-day the application of chemists, especially the greater skill necessary in making the many new alloy steels, and the manip-

ulation of the electric furnace demand the highest talent. The future of the chemist-metallurgist in steel making is bright.

The Threat of Alien Patents

The advocates of a compulsory working provision in the patent laws of the United States are calling attention anew to the injustice of the privilege accorded citizens of foreign countries to patent inventions here and then to permit them to lie unused.

Those who would amend the law point to the organized action of German manufacturers preceding the war in using our patent laws to secure control of the market for those products in which they specialized. They can see no reason why, if conditions remain unchanged, the Germans will not continue the same methods, and they believe manufacturers of other countries meanwhile would avail themselves of the opportunity to an extent they never attempted before, for the successful results of the system have been very well advertised.

Attorney General Palmer, formerly alien property custodian, in a recent article gives more clearly than they have been presented before, the details of the German practice, which operated practically as a conspiracy:

Because of the great number of research chemists engaged in this work (the dye industry) in Germany a far greater number of patentable inventions in organic chemistry were made by Germans than by the chemists of other countries. They took out patents by the thousands in the United States alone. For example, Bayer had accumulated something like 1200 such patents, which were placed in the names of subsidiary corporations. The Badische had approximately 500 patents, and each of the other German concerns had patents almost without number.

As there was practically no effort on the part of these companies to engage in American manufacture, these patents were obtained and held with the plain purpose of preventing the foundation of an American dye industry and to make impossible the importations from any other country than Germany. * * * By the amendment to the Trading with the Enemy Act adopted Nov. 4, 1917, an opportunity presented itself to do the most important piece of constructive work which had been given to the alien property custodian. Until this enactment had been approved it had not been possible to take over German patents. They had constituted a colossal barrier to the development of the American dye industry. They had never been taken out with the intention of application in this country. After we had considered all the facts and weighed all the possibilities presented to us, the appropriation of these patents seemed to guarantee protection for the new American dye industry after the war. * * * Under an executive order I sold to the Dye Institute and the American Manufacturing Chemists' Association for \$250,000 approximately 4500 patents.

The action of the alien property custodian cleared the chemical situation to date, but there is nothing to prevent a resumption of the practice when political and economic relations are re-established. The practice is not by any means confined to chemicals. Mechanical inventions, metallurgical processes and on through a long list may be retained by the foreign inventor to the complete exclusion of American industries. Labor is vitally affected as well as capital. Such examples are cited as the possible discovery by a foreign chemist of a perfect and very cheap substitute for shoe leather and the organizing of capital in that country to take the shoe industry from America by confining the working of the

invention to home factories, excepting as foreign governments might compel its working under their laws. The United States, home of the shoe industry, would be left out in the cold.

The German chemical patents, it has been proved, prevented the development of a great American industry, until a state of war made possible the nullification of the law as it affected them. It is not too much to assume that another brief cycle of years will see a similar accumulation of forbidden inventions. With a compulsory working clause foreign capital would come and manufacture various inventions here and absorb their profits, but the bulk of the returns, direct and indirect, would be distributed in the United States and the products would be available under normal and not abnormal conditions.

"The Iron Age" and Its Readers

That the interest in representative forms of shop government is not confined to the United States is shown by the receipt of a letter recently by THE IRON AGE from Peter Olsen of the Stavanger Electro-Staalverk, A. S., Jorpeland pr. Stavanger, Norway. He refers to an editorial published May 1 in THE IRON AGE in connection with the meeting of the National Metal Trades Association in New York. Mr. Olsen desires additional information as to the plans adopted by the Standard Oil Co. and other companies and as the result of his letter pamphlets describing representative systems have been sent to him by the Standard Oil Co., Midvale Steel & Ordnance Co., and the American Multigraph Co.

The latest tribute to the value of the diagram of steel manufacture prepared by R. B. Woodworth of the Carnegie Steel Co. and sent to its readers by THE IRON AGE, comes from the Japanese Chamber of Commerce, San Francisco, which requests permission to reprint the diagram in its new edition of the Japanese American Trade Year Book. Mr. Woodworth has given his permission and the diagram will appear in the new year book.

A manufacturer in one of the metal-working centers of Massachusetts, commenting recently on his reading of THE IRON AGE, said that early in 1918 he saw in the news columns of this journal a statement concerning a contract for war work taken by a company in —, N. J. He wrote a letter to the company saying that he could take on more work and the next day received a telegram asking him to call. The result was a contract that kept his plant running day and night for a year.

Locomotive Orders

The American Locomotive Co. has taken orders for 12 Mallet locomotives for the Java State Railways; 6 Mikado locomotives for the Cordoba Central Railway, Argentina, a British-owned road about 1200 miles long; 3 Consolidated locomotives for the Imperial Railways of Formosa and 2 Prairie locomotives for the Dorado Extension Railway of Chile.

After a four weeks' shutdown, the 48-in. universal plate mill at the Farrell, Pa., plant of the Carnegie Steel Co. resumed July 15. New housings, tables and bed plates were installed and the mill was overhauled.

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Coal and Coke Production

WASHINGTON, July 22.—Beehive coke production continues low. The Geological Survey estimates the output for the week ending July 12 at 325,648 net tons, compared with 680,000 tons in the week ended July 13, 1918, and with 264,328 tons in the five-day week of July 5, 1919. The production of beehive coke to date is estimated at 10,197,481 net tons, as against 16,412,818 in the corresponding period of last year.

The production of bituminous coal in the week ending July 12 is estimated at 10,169,000 net tons, an average per day of 1,695,000 tons, compared with an average of 1,492,000 tons for the five working days in the previous week, and compared with 2,214,000 tons in the week ended July 13, 1918. The production for the calendar year to date was 230,522,000 tons, or approximately 77,600,000 tons less than the corresponding period last year. The average daily production, considering only working days, has been about 500,000 tons less this year than last year.

Germany's Mineral Losses Under the Treaty

Stipulations Covering Lorraine and Silesian Iron Ore—French State to Own Saar Coal Property—Big Problems for Germany

WHAT the Peace Treaty with Germany has to say with regard to the ownership of iron and coal reserves she loses and some figures supplementing others already printed to indicate the economic importance of these changes on the world position of the German iron and steel industry are given in the following:

Iron Mines in Lorraine and Silesia

The status of the German-owned iron and steel plants in the so-called annexed or former German Lorraine is indicated in article 74 of the Peace Treaty with Germany, which says: "The French Government reserves the right to retain and liquidate all the property, rights and interests which German nationals or societies controlled by Germany possessed." And in article 297, "Germany undertakes to compensate her nationals in respect to the sale or retention of their property, rights or interests in Allied or Associated States."

As regards the iron ore reserves in Upper Silesia, now a part of Poland, the treaty stipulates in article 90 that "Poland undertakes to permit for a period of fifteen years the exportation to Germany of the products of the mines in any part of Upper Silesia. . . . Such products shall be free from all export duties or other charges or restrictions on exportation. Poland agrees to take such steps as may be necessary to secure that any such products shall be available for sale to purchasers in Germany on terms as favorable as are applicable to like products sold under similar conditions to purchasers in Poland or in any other country." According to article 92, in the matter of liquidating the property, rights and interests of German nationals—and they must reside outside of Poland, German nationals resident in Poland becoming Poles *ipso facto*—"the proceeds of the liquidation shall be paid direct to the owner."

Coal Mine Ownership in Saar Basin

In the Saar Basin, which is to remain under a commission government of the League of Nations for fifteen years before determining the sovereignty under which it is to be placed, the coal mines go definitely into the possession of France. Thus article 45 says: "As compensation for the destruction of the coal mines in the north of France and as part payment toward the total reparation due from Germany for the damage resulting from the war, Germany cedes to France in full and absolute possession, with exclusive rights of exploitation, unencumbered and free from all debts and charges of any kind, the coal mines situated in the Saar Basin."

In the annex following article 50 the deposits of coal become, it is stated, "the complete and absolute property of the French State." The transfer of ownership applies to "plant and equipment both on and below the surface, to their extracting machinery, their plants for transforming coal into electric power, coke and by-products, their workshops, means of communication, electric lines, plant for catching and distributing water, land, buildings such as offices, managers, employees' and workmen's dwellings, schools, hospitals and dispensaries, their stocks and supplies of every description, their archives and plans, and in general everything which those who own or exploit the mines possess or enjoy for the purpose of exploiting the mines and their accessories and subsidiaries." The rights acquired by employees are not affected but Germany must pay "a sum representing the actuarial amounts to which the said employees are entitled." The value of the property ceded to the French State will be determined by the Reparation Commission and the amount credited to Germany in part payment. "It will be for Germany to indemnify the proprietors or parties concerned, whoever they may be."

General figures have already been given to show how serious to the German iron and steel industry is the loss of control of the iron ore of German Lorraine.

Germany's Dependence on Lorraine

Further light is shown in articles contributed to *Le Génie Civil* by J. Tribot Laspière of the Comité des Forges, Paris. In the ten years preceding the war the production of iron ore in German Lorraine was over 70 per cent of the total produced by all of Germany, excluding Luxemburg, and in the last four years, 1910 to 1913 inclusive, over 74 per cent of the iron ore produced by Germany came from German Lorraine. In terms of the total iron ore reserve of Germany before the war, amounting to 3,607,000,000 tons, 2,330,000,000

Iron Ore Consumption in Germany and Luxemburg in 1913
(Round figures in thousands of tons)

Source of Ore	Regions of Consumption				
	Westphalia	Saar	German Lorraine	Luxemburg	Totals
German Lorraine.....	3,000	3,000	12,000	3,000	21,000
Luxemburg	500	300	300	4,400	5,500
Germany proper	3,600	200	.....	.....	2,700
Totals	7,100	3,500	12,300	7,400	27,000
Imported					
French Lorraine	1,000	500	600	1,200	3,300
Other parts of France	500	.....	.....	.....	500
Algeria-Tunis	600	.....	.....	.....	600
Sweden-Norway	3,700	.....	.....	1,100	4,800
Spain-Portugal	3,100	.....	.....	.....	200
Other countries	1,500	.....	.....	.....	4,800
Totals	10,400	500	600	1,200	13,000
General totals.....	17,500	4,000	12,900	8,600	47,000

tons were in German Lorraine. Luxemburg latterly produced about as much as Germany proper.

With the loss of German Lorraine, Germany proper thus has a reserve of about 1,277,000,000 tons, though the ore has an iron content of about 40 per cent, so that against a loss of a metallic iron reserve of some 750 million tons, the Lorraine ore running not over 33 per

German Blast Furnace Capacity in 1914

Germany and Luxemburg	In Blast			Daily Capacity Tons
	In Blast	Out of Blast	In Construction	
Westphalia	104	20	3	26,125
Siegen country	25	6	1	2,336
South Germany	9	2	1	750
Hesse and Hesse-Nassau	8	..	2	745
North and Central Germany	26	7	..	4,161
Upper Silesia	29	7	3	2,978
Saar	28	..	2	4,320
German Lorraine	56	8	3	10,530
Luxemburg	44	1	2	7,740
Totals	329	51	17	59,685

cent iron, Germany proper has in reserve 515 million tons of metallic iron.

An accompanying table shows the iron ore consumption of Germany in 1913 in round numbers with the sources of supply. This shows that outside of German Lorraine and Luxemburg Germany proper produced only 6,500,000 tons. German Lorraine supplied 21,000,000 tons and a total of 14,000,000 tons had to be imported in 1913. Westphalia alone consumed over 10,000,000 tons.

It is worth pointing out that of the 19,000,000 tons of pig iron produced in Germany in 1913, 40 per cent was substantially of foreign origin, the foreign ore running rich in iron. The number of German blast furnaces of record in the summer of 1914 is given in the

accompanying table according to the Gemeinfassliche Darstellung des Eisenhüttenwesens, published by the Verein deutscher Eisenhüttenleute:

The Saar Coal

In reference to the Saar coal fields, Mr. Laspière points out that the reserve is probably about 17,000 million tons and that with the annual production of 17,000,000 tons, there is enough to last at the present rate of use for 1000 years. He admits that the coal has a lower calorific value than the fuels of Northern France and Westphalia, but they are much higher in volatile matter. In some analyses he gives, the ash content ranges from 5 to 7.7 per cent; water from 2.6 to 7.4 per cent; volatile matter from 38.8 to 45.3 per cent, with a heat of combustion ranging from 14,300 to 14,850 B.t.u. per lb. Coke made from the coal is friable and contains a minimum of 12 per cent of ash, and ranks, he says, with the third rate Westphalian coke. Apparently the blast furnaces in the Saar and Lorraine regions do not use coke of this coal unless made from a mixture with other coals. Generally speaking the coal is regarded as best for boilers and domestic heating.

The Saar region is of some importance in the manufacture of pig iron and steel. In 1913 a total of 1,375,000 tons of pig iron were made and 1,652,000 tons of

Metallurgical Works in Saar Basin

	Blast Furnaces	Tons per Day	Con- verters	Open- Hearth Fur- naces
Dillinger Hüttenwerke	4	850	4	10
Stumm-Halberger	5	520	..	..
R. Böking	7	1,000	5	..
Roehling Brothers	6	800	4	1
Stumm Brothers	8	1,200	5	3
Burbach-Eich-Dudelange . .	..	..	..	2
Dingler, Kärcher & Co. . . .	..	..	..	9
Mannesmann Bros. . . . .	..	..	..	3
Hostenbach Works . . . . .	..	..	3	..
Rümeling & St. Ingbert Works . . . . .	..	..	..	..
	30	4,370	*..	†..

*21 of an average capacity of 21 tons.

†31 of an average capacity of 21 tons.

finished steel. The Saar region, however, produced only 8 per cent of the iron made by Germany, not including Luxemburg, and 12 per cent of the steel. The accompanying table gives the German steel works in the Saar region, some of which probably have owned local coal mines.

Germany Losing Business

Uncertainty as to delivery has lost considerable business to German steel and metal-working plants, according to a statement recently made by a representative of the Krupp works. One instance is an order from the Norwegian State Railways, which went to the United States. Added to the uncertainties are fresh demands from labor, which German manufacturers say they cannot grant. The Rhenish Westphalian iron industry is now the main source of supply for Germany's own needs, but only a part of that industry is active, raw materials being inadequate and laborers being unwilling to work. An Amsterdam letter of June 19 to the New York *Evening Post* says:

Not only with regard to the time of delivery, but also in prices, the United States is competing with Germany on the markets and is leaving Germany behind. America is offering iron bars and steel at 180 to 190 florins, f.o.b. Rotterdam, whereas the German price for such deliveries was 500 florins, though latest advices say that the quotation has been reduced to 250 florins. To this price the transportation expenses to Rotterdam have to be added, to compare with the American price. The cheap American offers will in the long run not only cause damage to the German industry, but also to the English, the latter also having to reckon with high costs of production.

It will depend upon the productive capacity of the German factories to what extent they will be able to gain back the lost export trade. In the first place, the question of supply of iron ore will have to be solved. It is expected that the French owners of the mines will only be prepared to deliver ore to Germany at prices which will result in an important rise in the costs of production. Also, the prices of Swedish and Spanish ores and those of other origin will have a bad influence on the costs of production, because of the low rate of German exchange. Nevertheless, it was reported recently that Germany had signed contracts for an important purchase of Swedish iron ore, enabling the country to keep its plants working for a long time to come.

Opinion in Holland is not optimistic as to the ability of German iron and steel works to get costs down sufficiently to compete for export trade.

BELGIAN STEEL MERGER

Plan for the Building of New Plants to Replace Those Wrecked

The London correspondent of THE IRON AGE cables that negotiations are under way for a consolidation of several steel companies in Belgium. A chief object of the consolidation, apparently, is to have the combined strength of the various companies behind a plan for the building of three or four large steel plants, each specializing in some form of material, these new works to replace plants wrecked by the German army. The capital talked of is 300,000,000 francs. Some steel interests are reported to be unfavorable to the project, but the aim of the promoters is said to be the ultimate inclusion of the entire Belgian steel industry, together with iron ore properties in the Briey basin and in the Duchy of Luxemburg.

In recent reports concerning the projected merger mention is made of the Ougree-Marihayé Works, also of the John Cockerill and Providence companies. The works of the first named are at Ougree, while the Cockerill works are at Seraing, and the Providence works are at Marchienne-au-Pont. The Providence company is French, its two plants in France being at Hautmont in the North and Réhou in the Muerthe-Moselle district. The Belgian steel companies have for years had an organization for the sale of their product similar to that of the German steel syndicate. The Belgian syndicate has been known as the Comptoir des Acieries Belges Société Anonyme. Nine of the leading steel companies were members of the syndicate. The existence of this organization would naturally facilitate any negotiations that might be undertaken for actual consolidation.

May Require Use of Steel Ties

WASHINGTON, July 22.—Advisability of requiring the railroads to use steel or some other material for railroad ties instead of wood is being considered by the House Committee on interstate and foreign commerce. A resolution introduced by Representative Dyer of Missouri is pending, providing for an investigation by the Interstate Commerce Commission with a view to the recommending of legislation by Congress. Favorable action is planned on the resolution, the chief question being whether a committee of Congress or the Interstate Commerce Commission should make the investigation.

Necessity of conserving the timber supply of the nation is the reason legislation on the subject is urged. E. H. Clapp, Assistant Forester of the Forestry Division of the Department of Agriculture, testified that the new growth of timber in the United States is probably not more than one-third of the amount which we are using and destroying. He urged the importance of the railroads finding some substitute for ties to impart relief to a serious situation.

H. T. Douglas, Jr., chief engineer of the Chicago & Alton Railroad, testified that his road had tried out steel ties and found them very satisfactory. He said he was satisfied that it was becoming impossible for railroads to secure suitable wood ties and that many roads are now using patched up ties that are very unsafe in many respects.

W. L. Rohback, chief engineer of the Wheeling & Lake Erie Railroad, gave similar testimony. He recommended that steel be used as a substitute for wood ties. He said this step would be an economic measure, beneficial to the railroads themselves, in that steel ties lasted much longer, were not expensive in upkeep and were safer for the public.

The Standard Steel Car Co., Hammond, Ind., has filed a claim of between \$5,500,000 to \$6,000,000 with the Army Claims Board for war work done for the Government.

VOTING ON STRIKES

Steel Workers Casting Ballots Under Auspices of Federation of Labor

At a meeting of 24 presidents of international unions of steel workers, held in Labor Temple, Pittsburgh, on Sunday, July 20, plans were made for taking a vote of employees of steel works, and probably blast furnaces as well, on the question of going out on a general strike. The main reason given by the union leaders for this action is that the United States Steel Corporation has refused, and in fact has ignored, a request of Samuel Gompers, president of the American Federation of Labor, to state the position of the Steel Corporation on recognition of labor unions and collective bargaining. It is said that about a month ago President Gompers sent a letter to Judge E. H. Gary, president of the American Iron and Steel Institute, asking him, as the representative of the steel companies, to define their position as regards labor unions among their men, and also asked the direct question whether steel mill owners would recognize the American Federation of Labor or affiliated labor unions. This letter has also been ignored, which, according to the by-laws of the American Federation of Labor and its allied labor unions, automatically constitutes the procedure of preparing and taking a vote on a general strike.

Program of Demands

A program of 12 demands was prepared at the meeting in Pittsburgh by presidents of the 24 various labor unions, to be placed before members of these unions on the vote to strike. These demands follow:

1. Right of collective bargaining.
2. Reinstatement of men discharged for union activities.
3. An 8-hr. day.
4. One day's rest in seven.
5. Abolition of the 24-hr. shift.
6. Increase in wage sufficient to guarantee American standard of living.
7. Standard scale of wages in all trades and classifications of workers.
8. Double rate of pay for all overtime, holiday and Sunday work.
9. Check-off system of collecting union dues and assessments.
10. Principles of seniority to apply in maintenance, reduction and increase of working forces.
11. Abolition of company unions.
12. Abolition of physical examination of applicants for employment.

Only members of the unions represented will be asked to vote on the strike. The committee in charge of negotiations with Judge Gary consists of John Fitzpatrick, D. J. Davis of the Amalgamated Steel Workers; Edward J. Evans, Chicago, of the Electrical Workers' Union; William Hannon, Chicago, of the Machinists' Union; and Mr. Foster, Pittsburgh. The strike vote must be taken in all unions within 30 days to be effective.

May Appeal to President Wilson

It is said that as a final move, before the general strike is called, the United States Government, through President Wilson, will be asked to induce the steel mill employers to permit the formation of labor unions in iron and steel plants all over the country. William Z. Foster, secretary of the National Committee of Labor Unions, in speaking of the above action, has said:

To-day's action of the national committee, we hope, will avert spasmodic strikes in the iron and steel industry throughout the United States. In many places where we have organized, men have been discharged or laid off by the thousands by the United States Steel Corporation and by other iron and steel and allied corporations. These discharged or laid off men have been clamoring for action by the national committee. In other places where they are practically 100 per cent organized the workers are ready for the next step, presenting demands. To-day's action by the national committee

was unanimous and had the entire approval of the American Federation of Labor.

It is not believed that the men employed in the plants of the subsidiaries of the United Steel Corporation will vote in favor of a strike. Probably a few may do so, but it is believed the vote, if taken, will be against going on strike. It has always been the policy of the subsidiary interests of the Steel Corporation to pay the highest rate of wage, and, in addition, thousands of men employed in the plants of the Steel Corporation are fairly large stockholders in it, and for these men to vote to go on strike would not only imperil their positions, together with their standing in the corporation's pension scheme, but might affect their financial interests as stockholders. The Steel Corporation for many years has spent immense sums of money each year in welfare work among its employees, and the employees have been apparently appreciative of these. This is also true to a very large extent among the independent steel works and blast furnace owners, and it is not believed many of the employees of the independent plants would favor a general strike. It is not thought the situation is as serious as some reports would seem to indicate, and there is the very best reason for believing that the vote to start a general strike will not carry.

Chairman Gary Does Not Expect a Strike

On behalf of representatives of New York newspapers this question was propounded to Chairman Gary of the United States Steel Corporation on Tuesday, July 22, after the regular meeting of the Finance Committee:

"Do you think that the movement now under way to unionize the employees of the United States Steel Corporation and to bring about a strike will meet with success?"

Chairman Gary replied: "I do not, for the reason that the employees have received and will continue to receive better treatment and better conditions of employment from the Steel Corporation under its principles and policies pertaining to labor than they could expect through the efforts of labor unions. The vast majority of workmen are not members of labor unions."

Youngstown Workers Opposed to Strike

YOUNGSTOWN, OHIO, July 22.—Workers in the steel mills in Mahoning valley, as a general rule, are adverse to the proposed strike throughout the industry. The majority are contented, and prefer to remain at their jobs. They are being paid higher wages than ever before, many are buying homes and stock in the companies in which they are employed. Professional, imported agitators have been able to make little headway in fomenting discord among them.

Secretary-Treasurer John E. McFadden of the Steel, Iron and Tin Industrial Campaign Committee, an organization working under the American Federation of Labor, says workers in steel plants in the Mahoning and Shenango valleys are taking a vote on the proposed strike. Mr. McFadden declares the strike vote is well under way at the mills in Youngstown, East Youngstown, Struthers, Lowellville, Girard, Niles, Warren, and in the Shenango valley. Labor leaders claim the new organization among the men includes laborers in all departments. In the Mahoning and Shenango valleys the sheet and tin plate mills are most thoroughly organized. Mr. McFadden claims there are 265,000 workers in the industry unionized throughout this country.

Manufacturers here are not inclined to regard the strike seriously, as they say they have signed the wage scale of the Amalgamated Association of Iron, Steel & Tin Workers.

Convention of Steel Treaters' Society

Many of the papers to be presented before the annual convention of the American Steel Treaters' Society to be held at the Seventh Regiment Armory, Chicago, on Sept. 22 to 27, are now in course of preparation. Some of the papers are to be read in person, others are to be presented by titles only, and others are being prepared for publication in the society's journal. The papers now in preparation are as follows:

John J. Jones of the Pressed Steel Car Co., Pittsburgh, "Heat Treatment of Tools for Alternate Contact."
 Jordon Korp of Leeds & Northrup, Philadelphia, "Proper Heat Treatment of Tool Steel."
 Shipley N. Brayshaw, London, England, "Salts for Quenching."
 R. P. Brown, Brown Instrument Co., Philadelphia, "Pyrometry."
 Herman A. Holz of New York, "Recent Developments in the Testing of Steel and Steel Products."
 John H. Higgins, Camden Forge Co., Camden, N. J., "An Investigation on Hot Rolled and Forged Four-Inch Steel Bars."
 S. C. Johnson, Pelton Steel Co., Milwaukee, Wis., "Cast Steel and Its Heat Treatment."
 John O. Liebig, Lancaster Steel Products Co., Lancaster, Pa., "Annealing of Chromium-molybdenum and Chromium Steels."
 H. D. Gates, Pangborn Corporation, Hagerstown, Md., "Sand-Blasting."
 Gordon A. Webb, Transmission Ball Bearing Co., Inc., Buffalo, "Case Hardening in General."
 Alvan T. Simonds, Simonds Mfg. Co., Fitchburg, Mass., "Helmet Steel."
 A. E. VanCleve, Crucible Steel Co. of America, Harrison, N. J., "Influence of Previous Annealing to Hardening."
 Roy C. McKenna, Vanadium Alloys Steel Co., Latrobe, Pa., "Metallurgy—In the Manufacture of High-Speed Steel."
 Ray T. Bayless, James H. Herron Co., Cleveland, "Results of Investigations Pertaining to Heat Treating."
 Frank P. Fahy, New York, "Steel for Electrical Purposes."
 D. R. Cornell, Standard Forgings Co., Indiana Harbor, Ind., "Effects of Forging Temperatures on Heat Treatment of Steels."
 Fred A. Volstorff, Wm. D. Gibson Co., Chicago, "Heat Treatment of Spring Steel."
 Chas. Eiser, Service Station Equipt. Co., Chicago, "Case Hardening in General."
 Harry E. Hemstreet, Sheldon Axle & Spring Co., Wilkes-Barre, Pa., "Flat Spring Steel" or "Truck Axles and Parts."
 J. L. Harkness, L-W-F Engineering Co., Inc., New York, "Results of Various Heat Treatments on Alloy Steels as Used in the Structural Parts of Air Craft."
 C. S. Gordon, Claud S. Gordon Co., Chicago, (1) "Fuel Consumption and Its Waste, as Affected by the Proper Use of Pyrometers and Design of Furnaces"; (2) "Practical Application of Pyrometers."
 Robt. P. Maynard, Maxon Premix Burner Co., Chicago, "Relation of Fuel and Furnace to Heat Treating."
 C. P. Berg, C. P. Berg & Co., Chicago, "Relation of Heat Treatment, Design and Selection of Steels for Metal Cutting Tools to Factory Production."
 G. A. Brewster, American Steel Foundries, Chicago, "Annealing Large Sections of Cast Nickel Steel."
 C. W. Diemecke, Miehle Printing Press & Mfg. Co., Chicago, "Steels for Projectiles."
 Arthur L. Collins, Atlas Ball Co., Philadelphia, "Heat Treatment of Balls for Bearings."
 C. P. Widdicombe, Electric Steel Co., Chicago, "Heat Treatment of Steel Castings."
 Wm. G. Conner, Geo. D. Whitcomb Mfg. Co., Rochelle, Ill., "Case Hardening in General."
 Arthur W. F. Green, John Illingsworth Steel Co., Philadelphia, "Heat Treatment of Rifle and Machine Gun Barrels."
 Frederick J. Griffiths, Central Steel Company, Massillon, Ohio, "Results of Investigations Pertaining to Heat Treating."
 W. G. Lottes, International Harvester Co., (1) "Physical Endurance Tests on Case Hardened Parts and Heat Treated Parts for Auto Trucks, Tractors and Agricultural Implements"; (2) "Remelting of Broken and Worn Tools of High Carbon and High Speed Steel."
 Wm. Machant, Briggs & Stratton Co., Milwaukee, Wis., "Heat Treatment of Steel."
 L. E. Howard, Simonds Steel Company, Lockport, N. Y., "Thin Armors Plate."
 C. U. Scott, Davenport, Iowa, "High Speed Steel."
 D. W. McDowell, Jones & Laughlin Co., Pittsburgh, "Heat Treated Wire Steel Products."
 Cyril J. Atkinson, Laboratories, Milwaukee, Wis., "Metallography of Steel."
 Fred Grotts, Holt Mfg. Company, Peoria, Ill., "Heat Treatment of Cast Steel in Tractor Construction."
 L. R. Seidell, New York Testing Laboratories, New York;
 Prof. A. E. White, University of Michigan, Ann Arbor, Mich.;
 E. J. Janitzky, Illinois Steel Co., South Chicago, Ill.; T. G. Seileck, Alfred O. Blaich Co., Chicago, subjects to be announced later.

Foreign Trade Convention

James A. Farrell, chairman of the National Foreign Trade Council, has appointed a Pacific Coast convention committee of the council, consisting of H. F. Alexander, Tacoma; J. K. Armsby, Robert Dollar, Frederick J. Koster, San Francisco; J. J. Donovan, Bellingham; M. H. Houser, Portland; and William Pigott, Seattle. The executive committee will consist of the San Francisco members.

Keen interest in the seventh annual convention to be held in San Francisco, May 12-15, is evident among

foreign traders even at this early date. Unusually elaborate plans are being perfected to make the occasion a memorable one. The attendance of Americans engaged in business abroad, and the entertainment of the wives of the visiting delegates, are features to which special attention will be given.

The official proceedings of the sixth national Foreign Trade Convention are now ready for distribution in book form. Copies have been sent by the National Foreign Trade Council to all delegates at the convention, and additional copies of his book or of the proceedings of the fourth and fifth conventions may be obtained from O. K. Davis, secretary National Foreign Trade Council, 1 Hanover Square, New York.

Americanization Bulletin of Illinois Steel Co.

To further the Americanization work being carried on for employees of the Illinois Steel Co., South Chicago, the following reasons are given non-English speaking workers for learning the English language:

LEARN THE LANGUAGE OF THE U. S. A.

1. Because of your work—you can then understand what your boss says to you. You can save his time and your time and the company's time. You can do better work every day. You can stand in line for a better job. You will be able to read all danger signs, all new notices that are posted in the plant. You can enjoy your work more.
2. Because you can then understand for yourself what this Government has to say about taxes, incomes, labor, and your place in this land.
3. Because it will be to your benefit even if you are going back to the "old country," for it will be of help to you in your travels and will enable you to know what America stands for and to take back with you her ideas.
4. Because it will help you in securing your first papers for citizenship in case you plan to live here. If you learn our language you can then learn of this wonderful country, its great men and women, how they worked, fought and died to make this country, how it grew with their labors and how great it now is; also you then can learn our laws, how they are made, you can understand what political candidates have to say on various sides of questions, and you may better judge how to vote wisely as a citizen of the United States.
5. Because you can then be a helper in your city and community. You can know better how to keep the laws of your neighborhood and help and urge others to keep them.
6. Because you can attend to matters of trade and personal business with less loss and less mistakes.
7. Because you can then talk every day with good Americans, and know what good American citizens think and feel and do in regard to the questions and affairs of our country and also the other nations.
8. Because it leads you a straight road to the securing of "those much wanted second naturalization papers."

Directory of the Electrochemical Industry

The American Electrochemical Society, Bethlehem, Pa., has issued a copyrighted pamphlet entitled "A Reference List of the Electrochemical Industry," which contains a comprehensive list of firms engaged in that industry in the United States and Canada and one of the products of the industry. The former gives in most cases the raw materials used, the products, the power and the number of employees. The latter compilation gives the principal makers of the leading products. The producers of electric steel castings and ingots are included.

For furthering British Commerce plans are announced by the University of London for establishing a three year course of study leading to the degree of bachelor of commerce. The foundation and maintenance of this new course of studies is expected to entail an annual cost of about \$100,000, necessitating the provision of a capital of about \$2,000,000. Business men are being urged to contribute.

The Marlin-Rockwell Corporation, New York, has acquired property at the southwest corner of Forty-sixth Street and Madison Avenue under lease for a period of 21 years at an aggregate rental said to be about \$2,000,000. The company plans for the immediate erection of a 14-story office building on the site, to be ready for occupancy early next year.

Electric Steel Furnaces in Great Britain

The London *Ironmonger* of June 21 publishes a list of the individual electric furnaces of various types making steel ingots of castings in Great Britain as they existed in May 1, 1919. An abstract of the details is as follows:

Electric Steel Furnaces in Great Britain, May 1, 1919

Type	Number	Capacity, Gross Tons
Heroult	53	106½
Electro-Metals	33	78
Greaves-Etchells	33	78¾
Kjellin	2	...
Stobie	8	73½
Snyder	8	...
Rennerfelt	7	14½
Stassano	4	...
Induction	2	...
Girod	1	...
Total	151	...

*Not given.

Of the 53 Heroult furnaces 15 are devoted to steel castings; of the 33 Electro-Metals, 7 are in foundries; of the 33 Greaves-Etchells, 11 are credited to steel castings, and of the 7 Rennerfelt only one is in a foundry, the rest in each case making steel ingots.

An interesting fact is that the Stobie type seems to predominate as the large melting unit, the eight furnaces having a capacity of 73½ tons as against only 78 tons for the 33 furnaces of either the Electro-Metals or the Greaves-Etchells type, and 106½ tons for the 53 Heroult furnaces. There are two 15-ton, one 20-ton and one 5-ton Stobie furnaces at the plant of the Stobie Steel Co., Dunston-on-Tyne, while Armstrong, Whitworth Co., Ltd., Manchester, is operating one 15-ton Stobie and Edgar Allen & Co., Ltd., Sheffield, one 10-ton Stobie.

The largest Greaves-Etchells furnaces are a 12-ton unit making ingots at the plant of Kayser, Ellison & Co., Ltd., Leyland, England, and a 10-ton furnace at the plant of the Parkgate Iron & Steel Co., Ltd., Sheffield. The largest Electro-Metals furnace is a 7½-ton unit, making ingots at the plant of Brown Bayley's Steel Works, Sheffield.

Thos. Frith & Sons, Ltd., is operating four 10-ton, three 6-ton, two 7-ton, one 3½-ton and one 1½-ton Heroult furnaces; Hadfields, Ltd., is operating eight 7-ton, two 3½-ton and one 1½-ton Heroult furnaces and Vickers, Ltd., all of Sheffield, is using two 10-ton, one 3½-ton and one 1½-ton Heroult furnaces. Dorman, Long & Co., Ltd., and J. Fairley & Co., Ltd., Sheffield, are both using a 7-ton Heroult furnace.

Of the 151 furnaces 73 are located in Sheffield, England.

Increased Furnace and Mill Operations in Youngstown District

YOUNGSTOWN, OHIO, July 22.—Twenty-one of 25 blast furnaces in the Mahoning valley are pouring, the last to blow in being Mattie furnace of the A. M. Byers Co., at Girard, Ohio, which was down several months for relining. The number of producing stacks closely approximates the average number of furnaces at work here during the war. No. 3 blast furnace at the Farrell, Pa., works of the Carnegie Steel Co., which has been rebuilt and its daily capacity increased from 350 to 500 tons, will resume within a few weeks. Finishing departments of local mills are consuming the bulk of the pig iron output.

Schedules vary from 90 to 100 per cent in all plants. The Republic Iron & Steel Co. is operating the Brown-Bonnell and Bessemer departments at maximum, except a 12-in. mill. Open-hearth schedules are approaching 80 per cent.

The Carnegie company is operating all six blast furnaces at the Ohio works. Deforest works of the Republic Iron & Steel Co., idle for installation of electric drives, will not resume for several weeks. Full schedules are announced by Brier Hill Steel, Trumbull Steel and Sharon Steel Hoop companies. The Youngstown Sheet & Tube Co. is running close to normal.

New Baily Furnace Installations in Non-Ferrous Plants

The Electric Furnace Co., Alliance, Ohio, has installed two Baily electric furnaces at the plant of the Capital Brass Works, Detroit. These furnaces are of the standard 105-kw. tilting type with hearth capacities of 1500 lb. each. They will be used for melting yellow brass, scrap and borings.

The Akron Bronze & Aluminum Co., Akron, Ohio, has installed a 50-kw. rectangular tilting type Baily furnace in its jobbing foundry. This has a hearth capacity of 300 to 500 lb. and will be used for a wide variety of compositions. Heats will range from 100 to 500 lb. and will include gun metal, phosphor bronze, red and yellow brass.

The Buick Motor Co., Flint, Mich., has purchased a second Baily electric furnace for melting phosphor bronze. This is of the tilting type rated at 1500 lb. hearth capacity and with an electrical capacity of 105 kw.

Sheet Business Active

YOUNGSTOWN, OHIO, July 22.—Sheet business has reached its old-time stride with mills booked four and five weeks ahead. One producer will start to roll an order August 1 for 30-gage black sheets. Automobile sheets lead in activity. The principal Valley tin producer is operating to maximum, with capacity production taken for practically three months. The principal tin plate demand is from can manufacturers.

Fabricating plants in this territory report improved business in the past month with advanced prices.

In the semi-finished field sheet bars and billets are in strong demand, with no deliveries promised under three to four weeks. Substantial inquiries are being received from the implement trades.

The scrap market is still growing firmer, one buyer paying \$24 for crops. Dealers were asking \$25 at the beginning of the week.

To Ask Import Duty on Farm Machinery

In resolutions passed by the executive board of the National Implement & Vehicle Association at Chicago, July 10, attention is called to the fact that the Canadian Government levies a duty of 12½ to 27½ per cent on imported farm machinery, while within the past few years the United States has removed all duty on agricultural machinery imported into this country. To remove this discrimination against domestic manufacturers, the resolutions direct that attorneys of the association prepare a bill to be introduced in congress providing that the United States levy an import duty on farm equipment equivalent to the duty exacted by the Canadian Government on similar equipment imported into Canada.

The Anglo-Norwegian Trade Journal states that the Minister of Norwegian Industrial Supplies has announced that the government proposes to subsidize various new steel works and rolling mills planned in Norway. Loans will be granted and premiums given on production. The latest project is a steel works to be established at Eidfjord, Hardanger. A company, with a capital of several million kroners, has secured water power and sites for the works, and will use a new electric melting process which is said to be much cheaper than methods used hitherto. The water power secured amounts to 50,000 h.p., of which 10,000 h.p. will be utilized as a beginning.

The use of coke-oven gas by German cities in Rhenish Westphalia was recently described in *Stahl und Eisen*. According to analyses made in the municipal testing laboratory of Remscheid, the gas was composed of hydrogen, 47.1 to 49.7; saturated hydrocarbons, 27.3 to 28.7; unsaturated hydrocarbons, 2.4 to 2.8; carbon monoxide, 5.6 to 5.9; carbon dioxide, 2.2 to 2.5 oxygen, 0.6 to 0.9; nitrogen, 11.4 to 13.2. The heating value ranged from 4926 to 5044 calories, (550 to 565 B.t.u. per cu. ft.). Benzol is removed from coke-oven gas delivered to a distance.

Electrolytic Destruction of Steel Due to Leakage from Electric Railroads

WASHINGTON, July 22.—Electrolytic destruction of water mains, gas mains and foundations of steel buildings, due to leakage from electric railroads, has always been an important problem of the steel industry and the Bureau of Standards has prepared for publication the Technological paper No. 127, by E. R. Shepard, giving the results of more than three years of measurements of the electrical resistance of the different types of road beds. This has been done particularly with reference to the possibility of safeguarding underground steel against the leakage from electric railroad systems.

Short sections of 14 common types of roadbeds were constructed on the grounds of the Bureau of Standards and resistance measurements under varying weather conditions were carried on for three years. Some measurements were also made on a number of city lines in and about Washington, both open track and several types of roadbed in paved streets being investigated. Through the co-operation of the United States Forest Products Laboratory at Madison, Wis., measurements were also made on several sections of test track on the Chicago, Milwaukee and St. Paul, where railroad ties subjected to several kinds of preservatives were employed. The results of these measurements are given in tabular and graphic form, and the following conclusions have been drawn:

Roadbeds constructed with solid concrete ballast and vitrified brick, or other non-porous pavement have a low leakage resistance to earth which is affected only moderately by seasonal and other changes. There is little difference between the wood and steel ties in their effect on the resistance of roadbeds of this kind.

Roadbeds constructed with a foundation of clean crushed stone under a concrete paving base have a much higher resistance than roadbeds with a solid concrete ballast.

In the case of the experimental roadbed the ratio was found to be about 3 to 1.

The resistance of earth roadbed in which the ties are embedded and therefore kept in moist condition is much lower than that of open construction roadbed.

The resistance of roadbeds of open construction is subject to wide variation, depending upon the condition of the ties and ballast. Cinder, gravel, and particularly crushed stone, when used as ballast in open track construction, produce very high-resistance roadbeds. Earth has a tendency to keep the ties moist and therefore to increase the leakage. Open construction track is often considered to be insulated from the earth, but this is not strictly true. O. F. S.

Sheet Mills to Be Added by American Rolling Mill Co.

The American Rolling Mill Co., Middletown, Ohio, has planned to increase its capital stock by issuing \$5,700,000 worth of 7 per cent cumulative debenture preferred stock, for which common stockholders will have the right to subscribe at par.

This additional capital is to be used in the erection of eight sheet mills and one jobbing mill at the East Side works at Middletown. During the war the company built four open-hearth furnaces to supply the demand for billets and shell steel forgings, and its present sheet mill capacity will not absorb all of this steel. The company's sheet mills have been operated at full capacity ever since the armistice was signed.

New Sloss-Sheffield Note Issue

Sloss-Sheffield Steel & Iron Co. ten-year, 6 per cent sinking fund notes are being offered by a banking syndicate of Lehman Brothers and Goldman, Sachs & Co. at 97½ and interest, to yield about 6.30 per cent. According to the announcement the properties, aggregating in value over \$25,000,000, are free from mortgage with the exception of an issue of \$2,000,000 first mortgage six per cent bonds, maturing Feb. 1, 1920. From the proceeds of these new notes \$2,060,000 will be deposited in escrow with the Central Union Trust Co. of New York for payment at maturity with interest on Feb. 1, 1920, of a like amount of first mortgage

bonds. The balance of the proceeds will be used to complete by-product coke ovens, to build a central power station, to electrify the coal and ore mines, to buy additional ore properties, and to make other general improvements. Total net tangible assets amounted to \$22,927,542 on Dec. 31, 1918, of which \$4,024,813 was represented by quick assets. The profits for 1918, after making provisions for estimated Federal Income Tax, were \$1,972,072, or about five and one-half times the amount required for the payment of interest on the proposed issue.

Developing Missouri Mines

ST. LOUIS, July 22.—The Mid-Continent Iron Co. of Missouri is preparing to develop a new iron mine located two and one-half miles from Taskee, Mo., that is considered to be one of the best prospects in the state. The Frisco Railroad has surveyed for a 4000-ft. spur to the mine from Taskee. The company officials expect to ship an average of four carloads of ore a day from the new mine. Several other prospects are being developed nearby and it is expected that the Taskee field will become one of the most important in Missouri.

OFFICE CHANGES

In order to secure more space the offices of the American Rolling Mill Co., Pittsburgh, have been moved from room 1832 to room 432 in the Oliver Building, in that city.

The Sharon Steel Hoop Co., Sharon, Pa., has opened a sales office in the Garfield Building, Cleveland, in charge of R. C. Garlick. This office will have charge of sales in the northern Ohio and Indiana districts.

The Cincinnati offices of the Whitaker-Glessner Co. have been removed from the Johnston Building to the St. Paul Building, Fourth and Walnut streets. A. F. Scherer is sales manager.

The Wagner Electric Mfg. Co., St. Louis, announces the removal of its Philadelphia office, service station and warehouse to 1632-34 Sansom Street.

The Chicago Pneumatic Tool Co. has removed its Minneapolis office from the Metropolitan Bank Building to Fifth Avenue and Fifth Street South, Minneapolis.

The General Tool & Supply Co., Saginaw, Mich., has opened an office in the Saginaw district, representing the Cleveland Milling Machine Co. It carries a stock of milling machines and a large supply of cutters.

The name of Lewis F. Shoemaker & Co., Philadelphia, New York and Pottstown, Pa., has been changed to Shoemaker-Satterthwait Bridge Co., the same management and personnel continuing.

The Slick-Knox Steel Co. has opened offices at Wheatland, Pa., where the company recently took over the buildings and site of the Blaw-Knox Pressed & Welded Steel Co. In addition to specializing in forging and rolling steel plate, the new concern is contemplating the manufacture of tank cars.

The Commercial Electrical Supply Co., St. Louis, has moved its offices and business from Fifteenth and Pine streets to Broadway and Spruce streets. The company manufactures generators, motors, wires and electric cables.

As a result of the relighting of blast furnace No. 4 at the Sharon works of the Carnegie Steel Co. and expected early resumption of No. 3 at Farrell, Pa., an increase of 25,000 tons of pig iron output per month will take place. No. 4 furnace was completely overhauled.

Charts giving the relations in any shaft between power, shaft diameter, torsional stress and speed are being distributed by the Wellman-Seaver-Morgan Co., Cleveland.

Iron and Steel Markets

THREAT OF A STEEL STRIKE

General Stoppage Regarded Improbable

July Domestic Business Greater than that of June, but Less for Export—Automobile Buying

The possibility of a strike at iron and steel works has loomed up in the past week, but it has not slowed down buying, and new business in a number of important products is still going on the books at a rate considerably exceeding current output of the mills.

The fact that labor unrest is world wide has made the decision reached at Pittsburgh for a strike vote in 24 unions represented at iron and steel works more threatening than it would ordinarily be. The great majority of steel workers are not members of unions. Apart from some organized blast furnace employees and the Amalgamated Association, which takes in workers in iron rolling mills, and a portion of the sheet and tin plate mill workers, the unions in iron and steel works are chiefly those of blacksmiths, machinists, molders, carpenters, electrical workers and other auxiliary trades. Numerically all such workers, union and non-union, are a relatively small part of the total of iron and steel works employees. In cases where the workers are well organized a strike by them might close down some steel-making departments.

The present outlook is that if a strike is voted it will not be general or serious. At the same time some producers are recognizing a new hazard in planning for the last quarter of the year.

Looking forward to the early winter months and to the chances of interrupted operation then, due to labor shortage or to strikes, a few owners are planning to blow in idle blast furnaces soon, even though some of the iron made in the next five months is piled.

Pig iron output is increasing with each week, Birmingham and the Chicago district adding a total of five furnaces to the active list in the week. There is a further strengthening of the market as round contract tonnages go on the books. A New England buyer has just closed for 5000 tons of foundry. An Indiana implement maker has taken 5000 tons for last half and an automobile interest has divided 7000 tons of foundry iron and 4000 tons of malleable between two Lake furnaces. A scale manufacturer is inquiring in the East for 20,000 tons of foundry iron and an air brake company has bought 6000 tons for last quarter. In the Pittsburgh district some makers are asking \$1 more and upward for last quarter iron.

The long-pending Willys-Overland contract for 125,000 tons of various forms of steel, deliveries over twelve months, is reported closed, as is presumably the large Ford tonnage, which has been under negotiation for some weeks.

Export steel orders for the three weeks of July have not held up to the June rate, yet leaders in the trade expect a large export movement throughout the year, particularly if there is an effort to in-

crease general imports from Europe and thus check the fall in sterling and other exchange.

Railroad material is noteworthy in the export trade. A total of 6000 cars is wanted for France and 1050 for Cuba. Of over 400 lately bought, 380 were for Cuba. The American Locomotive Co. has taken orders for 23 locomotives, 2 for Chile, 6 for the Argentina, 12 for Java and 3 for Formosa. Japan has bought 12,500 boxes of tin plate. Representatives of the Rumanian Government are now in this country arranging, among other things, to buy 25,000 tons of bridge work.

Two independent producers have advanced wire nails 25c. per keg to \$3.50, and plain wire \$2 per net ton, but the leading interest has taken no action.

Steel bars may be marked up next by one or two companies whose sales have nearly filled their mills for the late fall months. In general the bar capacity open for the fourth quarter is limited.

Chicago reports that the operations of the leading interest are now on a greater scale than at any time this year. Labor troubles have broken out in the foundry and metal-working trades in the Chicago territory and the lockout in the building trades clouds the structural outlook.

Skeelp mills in the Central West are losing some business because of full order books practically for the rest of the year. Pipe makers are besieged with additional inquiries; the Sun Oil Co. wants 300 miles of 8-in. pipe; the Texas Co. 100 miles of 12-in. and smaller pipe and 70 miles of 8-in. pipe. The Oklahoma Natural Gas Co. has bought 35 miles of 16-in. line and is in the market for 15 miles of 12 $\frac{3}{4}$ -in. pipe. Some first quarter of 1920 business has also been booked.

British ferromanganese is now offered at \$105, Baltimore, or \$10 below the recent price for domestic, and some sales have been made. The report that American basic iron sold at £8 4s., Liverpool, is questioned in view of the low price. The 20,000 tons of basic sold from Lorraine to a Scotch steel works is described as less desirable than American basic.

Pittsburgh

PITTSBURGH, July 22.

The labor situation is causing employers a good deal of anxiety, and the activities of the American Federation of Labor in this district may result in serious trouble before the year ends. Under the direction of the American Federation of Labor, 24 labor unions, involving steel mill, blast furnace and other employees of iron and steel plants, also molders, machinists, electrical workers and men in other trades, have been asked to vote on a general strike because of the reported refusal of the United States Steel Corporation to recognize or treat with labor unions in any way. It is not believed that blast furnace and steel works employees will vote in favor of a general strike, as they are said to be very well satisfied with their wages and general working conditions. Several owners of blast furnaces now idle, fearing winter scarcity of labor due to strikes and other causes, have

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	July 22, 1919	July 15, 1919	June 24, 1919	July 23, 1918
No. 2 X, Philadelphia....	\$29.10	\$29.10	\$29.50	\$34.40
No. 2, Valley furnace.....	26.75	26.75	26.75	33.00
No. 2, Southern, Cincin....	28.35	28.35	28.35	36.60
No. 2, Birmingham, Ala....	26.75	24.75	24.75	33.00
No. 2, furnace, Chicago*..	26.75	26.75	26.75	33.00
Basic, deliv., eastern Pa..	26.00	26.00	25.50	32.90
Basic, Valley furnace.....	25.75	25.75	25.75	32.00
Bessemer, Pittsburgh.....	29.35	29.35	29.35	36.60
Malleable Bess., Ch'go*..	27.25	27.25	27.25	33.50
Malleable, Valley.....	27.25	27.25	27.25	33.50
Gray forge, Pittsburgh....	27.15	27.15	27.15	33.40
L. S. charcoal, Chicago....	38.85	38.85	38.85	37.85

Rails, Billets, Etc.,

Per Gross Ton:	July 22, 1919	July 15, 1919	June 24, 1919	July 23, 1918
Bess. rails, heavy, at mill.	45.00	45.00	45.00	55.00
O-h. rails, heavy, at mill.	47.00	47.00	47.00	57.00
Bess. billets, Pittsburgh..	38.50	38.50	38.50	47.50
O-h. billets, Pittsburgh..	38.50	38.50	38.50	47.50
O-h. sheet bars, P'gh.....	42.00	42.00	42.00	51.00
Forging billets, base, P'gh.	51.00	51.00	51.00	60.00
O-h. billets, Phila.....	42.50	42.50	42.50	51.30
Wire rods, Pittsburgh....	52.00	52.00	52.00	57.00

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia....	2.595	2.595	2.595	3.73
Iron bars, Pittsburgh.....	2.75	2.75	2.35	3.50
Iron bars, Chicago.....	2.50	2.50	2.50	3.50
Steel bars, Pittsburgh....	2.35	2.35	2.35	2.90
Steel bars, New York.....	2.62	2.62	2.62	3.145
Tank plates, Pittsburgh..	2.65	2.65	2.65	3.25
Tank plates, New York...	2.92	2.92	2.92	3.495
Beams, etc., Pittsburgh...	2.45	2.45	2.45	3.00
Beams, etc., New York...	2.72	2.72	2.72	3.245
Skelp, grooved steel, P'gh.	2.45	2.45	2.45	2.90
Skelp, sheared steel, P'gh.	2.65	2.65	2.65	3.25
Steel hoops, Pittsburgh..	3.05	3.05	3.05	3.50

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire,	July 22, 1919	July 15, 1919	June 24, 1919	July 23, 1918
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh.	4.35	4.35	4.35	5.00
Sheets, galv., No. 28, P'gh.	5.70	5.70	5.70	6.25
Wire nails, Pittsburgh....	3.25	3.25	3.25	3.50
Cut nails, Pittsburgh.....	4.25	4.25	4.25	4.00
Fence wire, base, P'gh....	3.00	3.00	3.00	3.25
Barb wire, galv., P'gh....	4.10	4.10	4.10	4.35

Old Material,

Per Gross Ton:	July 22, 1919	July 15, 1919	June 24, 1919	July 23, 1918
Carwheels, Chicago.....	\$24.00	\$23.25	\$22.50	\$29.00
Carwheels, Philadelphia..	23.00	23.00	23.00	29.00
Heavy steel scrap, P'gh...	20.50	19.50	17.50	29.00
Heavy steel scrap, Phila..	19.00	19.00	17.00	29.00
Heavy steel scrap, Ch'go..	19.50	18.50	17.00	29.00
No. 1 cast, Pittsburgh....	22.50	19.00	19.00	29.00
No. 1 cast, Philadelphia..	22.00	22.00	22.00	29.00
No. 1 cast, Ch'go, net ton.	22.00	22.00	21.00	28.25
No. 1 RR. wrot., Phila....	25.00	25.00	22.00	34.00
No. 1 RR. wrot., Ch'go, net.	17.00	17.00	17.00	29.75

Coke, Connellsville,

Per Net Ton at Oven:	July 22, 1919	July 15, 1919	June 24, 1919	July 23, 1918
Furnace coke, prompt....	\$4.00	\$4.00	\$4.00	\$6.00
Furnace coke, future.....	4.12	4.12	4.00	6.00
Foundry coke, prompt....	5.00	5.00	4.75	7.00
Foundry coke, future.....	5.00	5.00	5.00	7.00

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	23.75	22.00	18.50	26.00
Electrolytic copper, N. Y.	23.50	21.75	18.25	26.00
Spelter, St. Louis.....	8.00	7.65	7.00	8.37½
Spelter, New York.....	8.35	8.00	7.35	8.62½
Lead, St. Louis.....	5.50	5.25	5.15	7.75
Lead, New York.....	5.75	5.50	5.40	8.05
Tin, New York.....	70.00	70.00	70.00	94.00
Antimony, Asiatic, N. Y..	9.25	8.37½	8.37½	13.25
Tin plate, 100-lb. box, P'gh	\$7.00	\$7.00	\$7.00	\$7.75

decided to blow in, pile the iron and be able to furnish it to their customers when needed.

The volume of new business in steel so far this month is heavier than in the same period in June, and on some lines, notably wire products and pipe, is more than double. In the first 10 or 12 days of this month some steel companies booked more business in their products than they will turn out in an entire month. On wire products several of the larger makers are practically out of the market, being sold up to third quarter, and not anxious to sell for fourth quarter. In line pipe and oil well tubular goods nearly all the larger mills are virtually sold up for the remainder of this year. The volume of business in sheets, tin plate and steel bars is very heavy and the demand for some of the lighter lines of steel, such as nuts and bolts, small spikes, rivets and shafting, is reported very much better. The makers of nuts and bolts who did not make the advances of 5 and 10 per cent early in July have now put up their prices. Two mills have advanced nails and wire and some blast furnaces are asking an advance of \$2 per ton on foundry, malleable and forge iron for last quarter delivery.

Pig Iron.—There was more activity as regards sales in the local pig iron market in the past week. There have been some sales of Bessemer iron, but the greater activity has been found in foundry, malleable and low phosphorus iron. We note a sale of 1500 tons of standard Bessemer iron to a local maker of rolls at the regular price of \$27.95 Valley furnace, deliveries 250 tons per month over this year, starting with July. Also a sale of 500 tons of Bessemer at \$27.95, 500 tons of basic at \$25.75, 3000 to 5000 tons of No. 2 foundry at \$26.75, 2000 tons and 6000 tons of malleable at \$27.25, all at Valley furnace, and mostly for third quarter delivery. We also note sales of upward of 5000 tons of low phosphorus. A new seller of iron in this district is the Weirton Steel Co. which has started its new 600-ton blast furnace at Weirton, West Va., on foundry iron, but will soon turn it to basic. Three or four idle blast furnaces in the Mahoning and Shenango Valleys are

being made ready to start and will blow in within the next month or two. Reports of recent sales of 30,000 tons of Bessemer iron in this district are incorrect. Most consumers of Bessemer are still using iron allocated to them during the war. Prices on pig iron are very firm and predictions are freely made that iron will be several dollars higher in the early fall.

Basic pig iron, \$25.75; Bessemer, \$27.95; gray forge, \$25.75; No. 2 foundry, \$26.75; No. 3 foundry, \$26.25, and Malleable, \$27.25; all per gross ton at Valley furnaces, the freight rate for delivery in the Cleveland and Pittsburgh districts being \$1.40 per ton.

Billets and Sheet Bars.—Owing to increased operations among the sheet and tin plate mills, the demand for sheet bars is much heavier and a scarcity in the supply is looming up. A Mahoning Valley producer of sheet bars has sold 5000 to 6000 tons in this district for third quarter delivery at the full price of \$42, Pittsburgh, freight from Pittsburgh to point of delivery being equalized by the seller. The Carnegie Steel Co. is reported to have no sheet bars to offer in the open market, its regular customers taking its entire supply. The demand for billets and slabs is only fair, but there is some activity in forging billets, sales of 600 to 800 tons being noted at the full price of \$51 base Pittsburgh for third quarter delivery. Prices on steel billets and sheet bars are very firm and nothing is heard any longer of cutting in prices.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at \$38.50, 2 x 2 in. billets at \$42; sheet bars, \$42; slabs, \$41, and forging billets, \$51 base, all f.o.b. at mill, Pittsburgh or Youngstown.

Ferroalloys.—The item of interest in this product is the inquiry of the Midvale Steel & Ordnance Co. for 5000 tons of ferromanganese for delivery over the remainder of this year, starting with 400 tons in July and running up to 1200 tons in December. This purchase will likely be closed direct with producers in Philadelphia, and local sellers are not figuring on the inquiry. The inquiry for ferromanganese is fairly active, and we note sales involving 100 tons, 200 tons, 400 tons and 600 tons, all at \$115 delivered for 78 to 82 per cent domestic.

It is said English producers are now offering 76 to 80 per cent ferromanganese at \$105 c.i.f. Baltimore, equal to \$109 and \$110 delivered. Domestic 78 to 82 per cent ferromanganese seems to be holding firm at \$115 delivered. The demand for 50 per cent ferrosilicon is only fair and resale material is being still offered as low as \$80 delivered. Recently an inquiry came into the market for 4000 tons of 18 to 22 per cent spiegeleisen for the remainder of the year delivery, and after considerable negotiation, this was closed at a price slightly above \$30 delivered. The inquiry for silvery iron is active, and several fairly large sales have been closed for delivery over the remainder of the year and the prices are firm.

We quote 78 to 82 per cent domestic ferromanganese at \$115 delivered, with a reduction of about \$2 per unit for lower percentages. We quote 50 per cent ferrosilicon at \$80, and 18 to 22 per cent spiegeleisen at \$32 to \$35, delivered. Prices on Bessemer ferrosilicon are: 9 per cent, \$47.75; 10 per cent, \$49.75; 11 per cent, \$53.05; 12 per cent, \$56.35. We quote 6 per cent silvery iron, \$36.75; 7 per cent, \$38.50; 8 per cent, \$40.25; 9 per cent, \$42.25, and 10 per cent, \$44.75. About \$3 per gross ton advance is charged for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, which have a uniform freight rate of \$2.90 per gross ton for delivery in the Pittsburgh district.

Plates.—Last week the government divided a contract for a fuel boat between two companies, the Carnegie Steel Co. taking 1000 tons of plates and shapes, and the Youngstown Sheet & Tube Co. 2090 tons of plates. Mills report the general demand for plates as slightly better. A good deal of tonnage is going into oil tanks on account of the great activity in oil production. The general average of operation among the plate mills is now running from 65 to 75 per cent. Reports that a large sale of ship plates has been made by a Pittsburgh mill at 2.50c., Pittsburgh, are not confirmed. Two leading mills disclaim having made the sale and say they would not accept this price. The regular price on 1/4-in. and heavier tank plate, adopted on March 21 last, is 2.65c., Pittsburgh, and local mills say they are holding this price firm.

Structural Material.—The inquiry is active and local fabricators say a large amount of new work is in sight, but it is slow in being closed. The Massillon Bridge Co. has taken 500 tons for a storage building at Massillon, Ohio. The McClintic-Marshall Co. has taken 500 tons for a Government house at Quantico, Va., and 260 tons for an extension to a machine erecting shop for the Mesta Machine Co. We quote beams and channels up to 15-in. at 2.45c., Pittsburgh, and it is said this price is firm.

Sheets.—This week the American Sheet & Tin Plate Co. is operating its hot sheet mills to 88 per cent of capacity and the independent mills are averaging 80 to 85 per cent. The demand for sheets of all grades is very heavy and some of the larger makers are sold over third quarter and have a good deal of business on their books for fourth quarter. Export demand for sheets is very active and the American Sheet & Tin Plate Co. is doing a heavy business in black, galvanized and corrugated sheets for shipment to France, Japan and other countries. Mills that make a specialty of automobile sheets are pretty well sold up for the remainder of this year, and reports are that some heavy orders for automobile sheets have lately been closed. Prices are firm, and there is little or no cutting. Prices on sheets effective from March 21 are given on page 269.

Tin Plate.—Conditions in the tin plate trade are getting more active, and this week the American Sheet & Tin Plate Co. is operating to 95 per cent of tin mill capacity. Several other large makers say they have ample orders to warrant them operating at 100 per cent of capacity, but they are unable to do so on account of scarcity of labor, especially rollers. The export demand is heavy and a local mill has booked 12,500 boxes for shipment to Japan. With tonnage already on the books, the tin plate mills now estimate they will run very close to 100 per cent capacity over the remainder of this year. Sales of upwards of 20,000 boxes of stock items are reported at \$6.50 per base box, and this now seems to be minimum. The demand for terne plate is very ac-

tive, several mills stating they are practically sold up for the remainder of this year. We quote production tin plate at \$7 per base box, f.o.b. Pittsburgh, while stock items are \$6.50 per base box. Prices on terne plate, effective from March 21, are given on page 269.

Iron and Steel Bars.—The demand for steel bars is very active and two of the larger producers are pretty well sold up for the remainder of this year, having no bars whatever for third quarter delivery, and only a limited quantity for fourth quarter. The demand for reinforcing steel bars and also for iron bars is much heavier than for some months. Mills rolling iron and steel bars are now operating at practically 100 per cent capacity.

We quote steel bars, rolled from billets, at 2.35c. and from old steel rails, 2.45c. Eastern mills are quoting iron bars for eastern shipment at 2.35c., while for western shipment 2.55c. Pittsburgh is quoted. Pittsburgh mills rolling iron bars quote at 2.75c., Pittsburgh, plus full freight rate to point of delivery.

Wire Rods.—The domestic and export demand for wire rods is active. We note a sale of 300 tons of soft rods to a domestic consumer at \$52, and a sale of 1000 tons for export at the same price. The demand for high carbon rods is active, several being sales reported at \$65 to \$80, depending on carbons. Prices on rods as adopted on March 21 are given on page 269.

Wire Products.—The Youngstown Sheet & Tube Co. has advanced prices on wire nails \$5 a ton, or 25c. per keg and also has advanced some of the extras, while the Cambria Steel Co. has made a straight advance of \$2 a ton on wire of all kinds, and 25c. a keg on bright and coated nails. So far, the American Steel & Wire Co., Pittsburgh Steel Co. and Jones & Laughlin Steel Co. have not advanced prices, but may do so in the near future. The demand for nails and wire is abnormally heavy, the two large makers being out of the market for third quarter and on orders for fourth quarter have instructed sales agents to submit them to the home office for approval before they are accepted. Jobbers are stocking up heavily and are placing orders for nails and wire very freely. Export demand is active, but local makers are not going after export trade very actively, desiring to conserve their entire output for domestic trade. Prices being still quoted by the makers on wire and wire nails, except Cambria Steel Co. and Youngstown Sheet & Tube Co. and adopted on March 21 last are given on page 269.

Cotton Ties.—The season in cotton ties is pretty well over, only a few straggling orders coming in for small lots. The price of cotton ties on new orders for July shipment is \$1.71½ per bundle of 45 lb., f.o.b. Pittsburgh.

Hoops and Bands.—The demand is now reported to be heavier than for some months, and two local mills rolling hoops and bands report they are now operating close to 100 per cent of capacity, but do not know how long they will be able to operate at this rate, as they have not a great amount of orders ahead. Prices are firm. We quote steel hoops and bands at 3.05c., Pittsburgh, plus usual extras.

Hot-Rolled Strip Steel.—Mills report that jobbers and consumers are buying more heavily than for some months, and mills making hot-rolled strips are now operating at 75 per cent of capacity. Mill men say consumers are very anxious now to cover ahead for the remainder of this year, but some makers are not disposed to sell for fourth quarter. We quote hot-rolled strips at 3.05c. to 3.30c. per lb., f.o.b. Pittsburgh, the higher price being paid by a few consumers who use hot-rolled strips for deep stamping and drawing purposes.

Cold-Rolled Strip Steel.—Makers report the demand heavier than for some months, and state they are now operating at 75 per cent of capacity. Prices are firm.

We quote cold-rolled strip steel at \$5.65 base per 100 lb., f.o.b. Pittsburgh, for 1½ in. and wider, 0.100 in. and thicker hard tempered in coils 0.20 carbon and under. Boxing charge 25c. per 100 lb.

Shafting and Screw Stock.—Makers report the demand as getting better and say they have more orders

on the books now than at any time since last fall. Automobile builders are placing large orders and implement makers are specifying heavily on contracts. Jobbers are carrying larger stocks and are placing orders freely for delivery in third quarter. Shafting makers say they are now operating at very close to 75 per cent of capacity. Discounts are reported as firm, and are 28 per cent off in car loads and 23 per cent in less than car loads.

Nuts and Bolts.—As outlined in our report last week, makers of nuts and bolts have advanced prices about 5 per cent, and on some kinds close to 10 per cent. The demand is reported heavy and several large makers of nuts and bolts report they are operating close to 100 per cent and have orders ahead that will take their entire output for the next two or three months. Discounts on nuts and bolts effective from July 21 are given on page 269.

Rivets.—No advance in price of rivets was made at the meeting of the manufacturers held in New York last week. The demand is reported heavier than for some months, and several local makers of rivets report they are now operating to about 75 per cent of capacity and have a fair amount of orders ahead. Prices are reported to be firm. We quote buttonhead structural rivets at \$3.70 and conehead boiler rivets at \$3.80 per 100 lb., f.o.b. Pittsburgh.

Spikes.—The demand for small spikes is very active, and two local makers report they are sold up on these for two or three months, and are three to four weeks behind in delivery. The jobbers are buying very freely of small spikes and carrying heavier stocks than for a long time. The demand for standard spikes is quiet, railroads buying only what spikes they absolutely need for repair work. The Baltimore & Ohio recently placed 3000 kegs with a local maker, and the Nickel Plate has bought about 2000 kegs.

We quote standard spikes, 9/16 x 4 1/2 in., and also small spikes, \$3.35 base per 100 lb. in carload lots of 200 kegs or more, plus usual extras. Boat and barge spikes, \$3.85 per 100 lb. in carload lots of 200 kegs or more.

Skelp.—Mills rolling skelp report they are sold up for practically the remainder of this year, and are turning away business on which they cannot make the delivery wanted. Prices are holding very firm, and we quote sheared steel skelp at 2.65c., universal 2.55c. and grooved 2.45c. per pound, f.o.b. Pittsburgh.

Iron and Steel Pipe.—Several of the larger mills report that up to July 15 they had booked in actual orders more than double the tonnage in pipe they can turn out in an entire month and turned down probably as much more business on which they could not make the delivery wanted. The Sun Oil Co., with main offices at Philadelphia, is in the market for 300 miles of 8-in. line pipe, several mills refusing to quote on the inquiry. The Oklahoma Natural Gas Co. has bought 35 miles of 16-in. line pipe and is in the market for 15 miles of 12 1/4-in. The Texas Co. has an inquiry out for 100 miles of 12-in. and smaller pipe. Another inquiry is for 70 miles of 8-in. pipe, and in fact the demand for line pipe and oil well tubular goods is so heavy that some mills have already booked orders for delivery in the first quarter of next year. Some intending buyers of line pipe whose inquiries have been turned down by the mills are now sending their inquiries to larger jobbers and asking them to try to place them with the mills. So far, none of the mills has advanced prices on pipe, except the Wheeling Steel & Iron Co., and it is entering orders at its new prices, which are \$5 per ton higher on butt-weld and \$10 per ton higher on lap-weld pipe than are being quoted by the other mills. The demand for butt-weld pipe is more active, several mills stating they are sold up over the next two or three months. Discounts will be found on page 269.

Boiler Tubes.—The new demand for boiler tubes is heavier than for some months, but for merchant tubes it is light and prices are still being more or less shaded. Discounts, which are not always minimum of prices quoted, are given on page 269.

Coke.—The demand for blast furnace coke for prompt shipment is more active and the supply is not as heavy, prices being firmer. We note a contract for 10,000 tons per month of standard grade blast furnace coke for delivery over the remainder of the year, starting with July, made on the basis of six tons of coke to a ton of basic iron, quotations each week on basic iron in THE IRON AGE to be used in this contract. At the present price of \$25.75 for basic iron at Valley furnace, this contract will net the seller \$4.29 per net ton at oven for his coke. A clause in the contract provides a minimum price of \$4 and a maximum price of \$8 per ton. We note another contract for blast furnace coke for 6000 tons for the remainder of this year, starting with July at the flat price of \$4.25 per net ton at oven.

We quote standard grades of 48-hr. furnace coke for prompt shipment at \$4 to \$4.10, and standard grades of 72-hr. foundry coke at \$5 to \$5.25 for prompt shipment or on contracts. Output of coke in the Upper and Lower Connellsville regions last week was 157,838 tons, an increase over the previous week of 7048 tons, the largest output of coke in the two regions named in one week for some months.

Old Material.—There is very little scrap being sold by dealers to consumers, but a good deal of trading is being done between dealers. Consumers of scrap have evidently decided to test out the higher prices asked by dealers before buying. Prices are very firm and unconfirmed reports are that heavy steel melting scrap has been sold to steel mills in the Youngstown district at \$22. The local market on heavy steel scrap is fully \$1 a ton higher than last week, but actual sales are very few. The amount of available scrap is not large and dealers are piling it freely, believing that higher prices for scrap within the next two or three months are probable.

Heavy steel, melting, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh, delivered	\$20.50 to \$21.00
No. 1 cast, for steel plants	22.50 to 23.00
Re-rolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Franklin, Pa., and Pittsburgh	20.00 to 21.00
Compressed steel	15.50 to 16.00
Bundled sheet, sides and ends, f.o.b. consumers' mills, Pittsburgh district	14.50 to 15.00
Bundled sheet stamping	13.00 to 13.50
No. 1 busheling	15.50 to 16.00
Railroad grate bars	16.00 to 17.00
Low phosphorus melting stock (bloom and billet ends, heavy plates) 1/4 in. and heavier	24.00 to 25.00
Iron car axles	30.00 to 31.00
Locomotive axles, steel	30.00 to 31.00
Steel car axles	27.00 to 28.00
Railroad malleable	17.00 to 17.50
Machine shop turnings	13.00 to 13.50
Cast iron wheels	23.00 to 24.00
Rolled steel wheels	20.00 to 21.00
Sheet bar crop ends (at origin)	20.00 to 20.50
Heavy steel axle turnings	14.50 to 15.00
Heavy breakable casts	20.50 to 21.00
Cast iron borings	14.00 to 14.50
No. 1 railroad wrought	20.50 to 21.00

Press reports to the effect that a large new steel plant is to be built at New Castle, Pa., cannot be confirmed. Charles Thomas, formerly with the Western Reserve Steel Co., but who sold out his interest in that company sometime ago, has been mentioned in the reports, but he states he is not in anyway identified with the reported project.

The Weirton Steel Co., July 21, started its new 600-ton blast furnace at Weirton. The furnace started on foundry iron, but will go on basic soon. Its entire product will be sold in the open market until the new steel plant is finished, which will be in a year or more.

No. 3 blast furnace of the Carnegie Steel Co. at Farrell, is being rebuilt, and will be ready for blast in a short time. The capacity of the furnace will be increased from 350 to about 500 tons per day.

Chicago

CHICAGO, July 22.

The outlook has both encouraging and disquieting factors. Through the passage of the Lake front ordinance yesterday, the Chicago Council authorized the Illinois Central electrification project, involving a total expenditure of \$88,500,000, of which \$16,000,000 will be spent on a passenger station, nearly \$18,000,000 on freight houses, and about \$2,000,000 on station facilities for the suburban service.

There has been a revival in order and inquiries for cars. France is in the market for 6000 freight cars, Cuba is inquiring for 1050 cars and Swift & Co., Chicago, for 400 refrigerator cars. A local car builder which recently entered the market for 10,000 tons of plates, shapes and bars to be used on freight car repairs, has increased this inquiry to 13,000 tons.

There is an encouraging demand for billets, the leading interest having booked orders for 2350 tons last week.

Prices are firm and in fact seem to be on the up grade. Cast-iron pipe has gone up \$2 a ton and an Eastern mill has announced advances on plain annealed wire, wire nails and cement-coated nails. The leading independent has withdrawn quotations on galvanized sheets because of the advance in spelter and jobbers have advanced galvanized and black sheets \$5 a ton.

The foremost independent continues to operate at about 75 per cent of ingot capacity.

Increasing labor difficulty constitutes the only discouraging feature of the market. A lockout of the building trades unions has tied up local construction work and a spirit of unrest is spreading throughout this district. The International Harvester Co. and a number of other local industries are closed on account of labor trouble, and numerous strikes are reported in other parts of this territory, particularly among foundries. The pig iron market has been the first to feel the effects of this situation, a noticeable decrease in orders and inquiries having taken place the past week. Scrap is still advancing as the result of speculative buying of railroad and Government material by dealers.

Up to date, however, no furnace has been willing to consider 1920 business. An order for 800 tons of silvery was recently placed by a local melter and a lot of 100 tons was sold on a Birmingham base. There is an active demand for spot silvery occasioned by the inability of foundries to secure deliveries on contracts with the Jackson County, Ohio, furnaces which are still tied up by strikes. The Red River, Tennessee, furnace is also out of blast. Malleable foundries in this district specializing in railroad business are busier than they have been for a protracted period. Little Southern foundry is now being sold, but one lot of 300 tons was recently placed on a Birmingham base of \$26.75 plus the full freight and the differential for silicon content. Consumers of charcoal iron are steadily filling their last half requirements, but most individual orders are small.

The output of the leading interest is greater than at any time since the first of the year, being over 65 per cent of ingot capacity. All the finishing mills at Gary are operating, the rail mill rolling about 12,000 tons a week, or more than 70 per cent of its maximum production. Two additional blast furnaces will be blown in at the South Chicago works next week.

Pig Iron.—The market is less active than a week ago, when a general revival in interest was evident and a new cycle of buying was thought to be developing. The let up in business is attributed to an epidemic of strikes which is spreading throughout this district. Among local consumers of iron, whose plants are closed on account of labor difficulties, are the International Harvester Co., Crane Co., the Illinois Malleable Iron Co., and the Western Foundry Co. The Green Engineering Co., East Chicago, Ind., the Western Steel Car & Foundry Co., Hegewisch, Ill., and all the foundries except two in Minneapolis and St. Paul, Minn., have also been closed because of strikes. Despite these unfavorable developments, the leading Northern interest is booking as much business as it did in June, and blew

in an additional furnace last week. Most current orders are for 1000 tons or less and are confined to malleable and foundry grades. The leading seller expects to ship 65,000 tons this month, or as much as it has delivered in any similar period this year. In general, shipments are lagging behind orders to a greater extent than heretofore, owing to the growing scarcity of freight equipment. One seller has received inquiries totalling 2000 tons for delivery the first half of next year, and another seller was asked to quote on 5000 tons of malleable for 1920 delivery.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable and steel-making irons, including low phosphorus, which are f.o.b. furnace and do not include a switching charge averaging 50c. per ton:

Lake Superior charcoal, average silicon, 1.50 second half delivery, f.o.b. furnace, average freight to Chicago \$2.50 (other grades subject to usual differentials)	\$29.25
Northern coke foundry, No. 1 silicon, 2.25 to 2.75	28.00
Northern coke foundry, No. 2 silicon, 1.75 to 2.25	26.75
Northern high-phosphorus foundry	26.75
Southern coke, No. 1 foundry and No. 1 soft silicon, 2.75 to 3.25	34.75
Southern coke, No. 2 foundry, silicon, 2.25 to 2.75	33.00
Southern foundry silicon, 1.75 to 2.25	31.75
Malleable, not over 2.25 silicon	27.25
Standard Bessemer	27.95
Basic	25.75
Low phosphorus (copper free)	40.00
Silvery, 7 per cent	42.05

Ferroalloys.—A week ago sales of 600 tons of ferromanganese and 500 and 1000 tons of spiegeleisen were made in this territory, but since that time there has been a lull in business. Ferromanganese is now being offered at \$115 delivered, and spiegeleisen at \$30 to \$35 furnace.

Structural Material.—A lockout of 100,000 building trades workmen in Chicago, declared on July 18, makes the future of contemplated construction work here uncertain. As the unions have since indicated a willingness to compromise, it is regarded as likely that a settlement will be reached. A spirit of unrest, however, seems to be spreading among labor. The erection forces of a fabricator in this district have struck and similar action is heard elsewhere. Plans are now being drawn by Edward Shank, architect, First National Bank Building, Chicago, for a plant to be erected for the Cook County Paper Stock Co., at Thirty-first Street and Kedzie Avenue. One unit will be 600 x 1,000 ft. and another 300 x 950 ft. The buildings will be of steel construction, but no estimate has yet been made of the tonnage which will be required. The Toledo Bridge & Crane Co., Toledo, Ohio, will fabricate 654 tons for the King City bridge, King City, Cal. Other recent awards include:

Continental Motors Corporation plant, Muskegon, Mich., 850 tons to Lackawanna Bridge Co.
Iroquois Iron Co., South Chicago, Ill., remodeling skip hoist, ore bins and cast house and extension to boiler house, 271 tons to Worden-Allen Co.
Chicago, St. Paul, Minneapolis & Omaha Railroad, girder spans, 200 tons, to American Bridge Co.
Eggers Veneer Heating Co. Plant, Two Rivers, Wis., 175 tons, to Milwaukee Structural Steel Co.

Among new inquiries, the largest is for 1700 tons to be used in the construction of a plant for the Nelson Corporation, Cambridge, Mass. Figures will be taken this week on 500 tons for the Drake Hotel, Chicago. Other inquiries include:

Montgomery, Ward & Co., gas engine plant, Springfield, Ill., 400 tons.
Southwestern Milling Co., grain elevator, Kansas City, Mo., 460 tons.
George B. Lambert, machine shop, East Chicago, Ind., 350 tons.
Hill Pump Valve Co., plant, Chicago, 250 tons.
Hubbard Steel Foundry Co. plant, East Chicago, Ind., 50 tons.

The mill quotation is 2.45c. Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 3.47c. for material out of warehouse.

Bars.—Agricultural implement manufacturers have contracted for a large part of their last half requirements. Purchases of reinforcing bars have been heavier of late because of the necessity of placing orders upon

which delivery can be made during the present building season. Numerous export inquiries for soft steel bars have been received. It is predicted that bar iron mills will raise their prices if scrap continues to advance. An Indiana mill has already withdrawn its prices. Business continues poor because of the small railroad demand.

Mill prices are: Mild steel bars, 2.35c., Pittsburgh, taking a freight rate of 27c. per 100 lb.; common bar iron, 2.50c. to 2.62c. Chicago; rail carbon, 2.45c. mill. Jobbers quote 3.37c. for steel bars out of warehouse.

Plates.—Although there continues to be a gradual improvement in business, there is not yet as much activity in plates as in some other steel products. A revival in inquiries and orders for cars, particularly from foreign countries, has proved a source of considerable encouragement to the trade. The American Oceanic Corporation, New York, is inquiring for 5,000 flat cars for export to France, while the French State Railways are in the market for 1,000 freight cars. The Havana Central, Cuba, is inquiring for 500 box cars, 30 tons capacity, 500 flat cars, 25 tons capacity, and 50 15-ton narrow gage cane cars. The Texas & Pacific Railroad is in the market for 110 tank cars and 25 locomotives, and Swift & Company, Chicago, are inquiring for 400 refrigerator cars, 40 tons capacity. Among recent orders booked by the American Car & Foundry Co., Chicago, are 100 steel mine cars for the Clearfield Bituminous Coal Corporation, Clearfield, Pa., 30 cane cars for export to Cuba, 20 of which are for the Central Cunagua Railroad, and 100 flat cars and 250 box cars for the Cuba Northern Railroad, 20 40-ton steel ore cars for export to Peru, and 12 gondola cars and one observation car for the Colombian Northern Railroad. The Liberty Car & Equipment Co., Chicago, has ordered 1,200 tons of plates and a tonnage of bars from the leading interest to be used on car repairs. The Ryan Car Co., which recently asked for figures on 10,000 tons of plates, shapes and bars, has since been awarded the contract for the car repair work on which this material will be used, and has increased its inquiry to 13,000 tons.

The mill quotation is 2.65c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers quote 3.67c. for plates out of stock.

Sheets.—Most mills competing in this district are sold up for two and three months ahead. There is increasing talk of possible price advances. The leading independent, in fact, has discontinued quoting on galvanized sheets because of the advance in spelter. Jobbers have already advanced No. 28 black and galvanized \$5 a ton.

Mill quotations are 4.35c. for No. 28 black, 3.55c. for No. 10 blue annealed, and 5.70c. for No. 28 galvanized.

Jobbers quote Chicago delivery out of stock; No. 10 blue annealed, 4.57c.; No. 28 black, 5.62c., and No. 28 galvanized 6.97c.

Wire Products.—An Eastern mill has advanced wire nails to \$3.50 base per keg, cement coated nails to \$3.10 base per keg, and plain annealed wire to \$3.10 base per 100 lb. There has been no let-up in business. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 269.

Rails and Track Supplies.—The Gary rail mill is now rolling about 12,000 tons per week, or over 70 per cent of capacity. Some foreign business in rails and track supplies has been booked recently, most of it coming from South America. The demand for light rails is not active. The railroads continue to make small purchases of track supplies to meet pressing needs.

Standard railroad spikes, 3.35c. Pittsburgh. Track bolts with square nuts, 4.35c. Pittsburgh. Steel tie plates and iron angle bars, 2.75c., Pittsburgh and Chicago; tie plates, iron, 2.75c. f.o.b. makers' mills. Light rails, 2.45c. f.o.b. makers' mills, with usual extras.

Bolts and Nuts.—Specifications are heavy, and a good volume of business is being placed at the new prices. Mill quotations for delivery in this territory are as follows:

Structural rivets, 4.72c.; boiler rivets, 4.82c.; machine bolts up to $\frac{3}{4}$ x 4 in., 50 and 10 per cent off; larger sizes, 40 and 10 off; carriage bolts up to $\frac{3}{4}$ x 6 in., 50 and 5 off; larger sizes, 40 off; hot pressed nuts, square tapped and hexagon tapped, \$2 off; coach or lag screws, gimlet points, square heads, 50 and 10 per cent off. Quantity extras for nuts are cancelled.

Cast-Iron Pipe.—Prices have been advanced \$2 a ton. Current inquiries include:

Sterling, Col., 1000 tons, bids in July 22.

Akron, Ohio, 1200 tons, bids to be in Aug. 1.

Decatur, Ill., 125 tons, bids to be in July 25.

Portsmouth, Ohio, 350 tons, bids to be in July 28.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., \$56.30; 6-in. and larger, \$53.80; class A and gas pipe, \$1 extra.

Old Material.—Although consumers continue to buy sparingly, their purchases are heavier than they have been for some time. A purchase of 2,000 tons of malleable scrap is reported, and a number of lots of heavy melting steel have been taken by consumers. While the recent advances are regarded as artificial in some quarters, mills and melters are showing an increasing disposition to regard them seriously. It is admitted by some consumers that they will have to raise their prices if the present advances in scrap continue. Dealers are absorbing all the railroad and Government material offered at the market prices in anticipation of advantageous sales later. They predict that heavy melting will soon reach \$25. The Ordnance Department of the Army will take figures on July 28 on 15,000 tons of shell steel lying in the yards of the Standard Forging Co., Indiana Harbor, Ind. The Chicago, Rock Island & Pacific has issued a list of 1,000 tons, the Chicago Great Western a list of 1,000 tons and the Elgin, Joliet & Eastern, 200 tons.

Per Gross Ton

We quote delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Iron rails	\$24.00 to \$25.00
Relaying rails	35.00 to 45.00
Carwheels	24.00 to 25.00
Steel rails, rerolling	27.50 to 28.50
Steel rails, less than 3 ft.	24.50 to 25.00
Heavy melting steel	19.50 to 20.50
Frogs, switches and guards cut apart	19.50 to 20.50
Shoveling steel	19.50 to 20.00

Per Net Ton

Iron angles and splice bars	\$22.00 to \$23.00
Steel angle bars	19.00 to 19.50
Iron arch bars and transoms	23.50 to 24.50
Iron car axles	28.50 to 29.50
Steel car axles	26.50 to 27.00
No. 1 busheling	16.50 to 17.00
No. 2 busheling	12.00 to 12.50
Cut forge	17.00 to 17.50
Pipes and flues	14.25 to 14.75
No. 1 railroad wrought	17.50 to 18.50
No. 2 railroad wrought	17.00 to 17.50
Steel knuckles and couplers	18.00 to 18.50
Coil springs	20.50 to 21.00
No. 1 cast	22.00 to 23.00
Boiler punchings	20.00 to 20.50
Locomotive tires, smooth	20.00 to 20.50
Machine shop turnings	8.50 to 9.00
Cast borings	10.75 to 11.75
Stove plate and light cast	17.75 to 18.75
Grate bars	17.50 to 18.00
Brake shoes	18.00 to 19.00
Railroad malleable	19.00 to 20.00
Agricultural malleable	18.50 to 19.00
Country mixed	14.50 to 15.50

Philadelphia

PHILADELPHIA, July 22.

The better feeling, noted a week ago, continues to command attention, but it is to be noted that the betterment is spotty. So filled up is a large independent maker of wire products that, effective July 21, it advanced prices 25c. per keg on nails and 10c. per 100 lb. on plain wire. At the former prices, it is declared there was but little profit in these products, especially with kegs costing 26c. to 35c. each. The same company is well booked with orders for mild steel bars and an advance in these is declared probable.

Quite encouraging to the trade is the increased number of miscellaneous inquiries. The Norfolk & Western Railroad is inquiring for a fair tonnage of iron and steel bars and shapes. The Bethlehem Ship Co., Fore River plant, will require upwards of 5000 tons of plates, shapes and sheets for six destroyers, which probably will be supplied by the Bethlehem Steel Co.

H. B. Spencer, chairman Central Advisory Purchasing Committee, United States Railroad Commission, has issued to railroads a request that in placing orders they favor the Pittsburgh mills rather than those in eastern

Pennsylvania, the supposed reason being that he aims to force the latter mills to sell f.o.b. mill, instead of on the Pittsburgh base. It is unofficially explained that when an eastern mill sells on the Pittsburgh base, the buying railroad has to pay the freight, but does not get the haul.

It is contended, on the other hand, by some Eastern mill representatives that while finished steel made in an eastern mill may not mean as much to the railroads in freight, that same steel represents the transportation of raw material, ore, coke and limestone, to a degree that more than offsets the shorter haul of the finished product and its consequent smaller revenue to the railroads in delivering to a railroad shop. The Philadelphia & Reading is the line most affected by the request as it serves several eastern mills. One eastern plate mill sells f.o.b. mill to the Pennsylvania Railroad, but on shipments to Altoona the Pennsylvania gains no financial advantage by the arrangement. It does not yet appear what steps the eastern Pennsylvania mills will take, but some are selling no steel to railroads.

The Reading Iron Co., Reading, Pa., has settled with its puddlers on a basis of \$10.75 per ton, and has resumed work. Lebanon iron plants expect to arrive at a settlement with their striking employees this week so that they may resume work by Monday next.

British makers of ferromanganese, in competition with domestic producers, have again cut their prices, now asking \$105 a ton, f.o.b. seaboard, a reduction of \$10. In pig iron, some fairly good-sized lots have been placed, and there is a further tightening of the market in regard to prices. The Crane Co. is inquiring for 5000 tons of foundry.

Pig iron.—The demand for foundry iron continues to maintain proportions that are about normal for mid-summer, and it may be a little better than normal. Prices are certainly stiffer, and it is more certain that low-priced sellers are less willing to sell at low figures, while some are entirely out of the market. The interest displayed by consumers is construed to mean they are convinced the market has touched the bottom. Eastern Pennsylvania No. 2 X foundry, silicon 2.25 to 2.75, continues to show a wide range in price, but the bulk of quotations are between \$29.60 to \$31.10, Philadelphia, with some quotations still outstanding at \$28.60, Philadelphia. Interests that were quoting \$28, furnace, a week ago, have advanced to \$29, and others quote \$29.50. A Buffalo producer quotes \$28, furnace, the delivered price being \$31.90. Some inquiries for good-sized tonnages have been received and, in one or two instances, closed. Intermixed with these is a fair aggregate of small lots. The pipe foundries are beginning to show interest, one in particular being willing to buy, but at a figure that does not interest the sellers sufficiently. The Crane Co. is inquiring for 5000 tons of foundry for its Bridgeport shops, but the business is unlikely to come here. One seller reports sales of 800, 600, 400 and several 200-ton lots, placed at \$28, furnace. Reported, but not confirmed, is the purchase of a round low of standard low phosphorus at \$35, furnace. A Virginia maker adheres to \$30.60, delivered, as its price for No. 2 X, quoting the same for No. 2 plain. The first inquiry for basic in many weeks specifies 2,000 tons. It comes from a wire manufacturer. What this business will go at is problematical, as it is conceded that the average price at which the last sales were made—\$26, delivered—has been left behind. In last week's market it was erroneously stated that Government iron at Burnham, Pa., on which bids were taken was basic, whereas it was low phosphorus, although the offers were as low as \$25.30 and \$27, Burnham. In the week inquiries aggregating 1,500 tons of low phosphorus have appeared.

Eastern Penna. No. 2 X (2.25 to 2.75 sil.)	\$29.10 to \$31.10
Eastern Penna. No. 2 plain (1.75 to 2.25 sil.)	28.60 to 30.60
Virginia No. 2 X (2.25 to 2.75 sil.)	30.60
Virginia No. 2 plain (1.75 to 2.25 sil.)	30.60
Basic	26.00 to 27.00
Gray forge	26.00 to 26.50
Malleable	28.35
Standard low phosphorus (f.o.b. furnace)	35.00
Copper bearing low phosphorus (f.o.b. furnace)	35.00

Ferroalloys.—The British makers, seemingly determined to get business, have reduced their quotations again, now quoting \$105, f.o.b. seaboard, a reduction of \$10, and at this new low figure a little business has been done. The last quotation made by domestic producers was \$115, delivered. What they will do now remains to be seen, but it is not regarded as likely that they will permit business to be lost. They have been quoting \$115, delivered. Spiegeleisen is stronger. Small lots have been placed at \$35, furnace. It is scarce and the producers are not anxious to sell large tonnages, evidently because of a belief that a higher market is not far distant. The market may be quoted at \$33 to \$35, furnace, with but little to be obtained at the lower price. No British ferromanganese arrived at this port in the week ended July 31.

Plates.—From miscellaneous sources the demand is slightly more active, but plates continue to present a disappointing aspect. Whatever the change in the situation, it is, however, no worse, and probably is better. There are indications of better buying for export, this being prospective, and depending much on more favorable ocean freights. Some foreign inquiry is coming through at the present time, but the volume of resulting business is not large. While most interests give 2.895c., Philadelphia, as their minimum, it is admitted that 2.745c., on the basis of 2.50c., Pittsburgh, might be done in some quarters. A recent inquiry was for 2,000 tons for car repairs.

Structural Material.—There is but little or no change and the market remains quiet, but with the trade nevertheless hopeful. The labor situation is regarded as a menace to building activity. A strike of the building trades at Chicago is disquieting. The general quotation is 2.695c., Philadelphia, for plain material.

Bars.—One important maker of steel bars is in so comfortable a position on mild steel bars that it contemplates an advance from 2.35c., Pittsburgh, or 2.595c., Philadelphia. A maker of iron bars, which recently advanced its quotation to 2.745c., Philadelphia, has taken a little business on that basis, but iron bars are still obtainable at 2.595c., Philadelphia. The Reading Iron Co. has settled with its puddlers, the scale being readjusted to \$10.75 a ton. Lebanon mills hope to effect a settlement and resume operations by next Monday.

Semi-Finished Material.—The demand is quiet. Quotations are unchanged at \$42.50, Philadelphia, for 4 x 4-in. open-hearth rerolling billets; \$55, Philadelphia, for forging billets, and \$45, Philadelphia, for slabs.

Wire Products.—Effective July 21, a large independent maker advanced its prices 25c. on nails, and is now quoting \$3.50, base, per keg, and \$3.10, base, on cement coated nails; while plain wire has been advanced 10c. per 100 lb., or to \$3.10. This mill is practically out of the market, so persistent has been the demand of recent weeks. One reason for the high prices is that kegs are costing 26c. to 35c. each. For mill prices quoted by other producers, see finished iron and steel, f.o.b. Pittsburgh, page 269.

Rails and Track Supplies.—For light rails a good demand has developed, more interest on the part of the mines, in particular, being shown.

Bolts, Nuts and Rivets.—A somewhat better demand is reported. The strike of puddlers at the American Iron & Steel Works of the Bethlehem Steel Co., at Lebanon, did not interfere with the operation of the company's bolt and nut works at that place. Several inquiries for washers in carload and part carload lots have been received by one company.

Carriage bolts, $\frac{3}{4}$ x 6 in., rolled threads, 60 per cent off; cut thread, 50 and 10 per cent off; larger and longer, 45 and 5 per cent off; small machine bolts, $\frac{3}{4}$ x 4 in., smaller and shorter, rolled threads, 60 and 10 per cent off; cut thread, 60 per cent off; larger and longer, 50 and 5 per cent off; lag screws, 65 per cent off; nuts, square and hexagon blank, \$3.10 off list; tapped, \$2.85 off list.

Coke.—No noteworthy activity in coke is reported. New River foundry is quoted at \$7.50 to \$8, and Poca-hontas at \$6.50 to \$7.50, ovens. Other foundry coke is quoted at \$5.50 ovens, and Connellsville bee-hive and Eastern district by-product foundry at \$5.25, ovens.

Prompt furnace is offered at \$4.15 to \$4.25, ovens, and last half at \$4.65 to \$4.75.

Old Material.—Very little change can be reported in a market that continues largely governed by the dealers, though no small influence in its course is the offering of Government surplus material. One or two mills are reported to be receptive to heavy melting steel at \$19, though one has shaved this price a little by purchasing small lots direct from yard men. For 700 tons of miscellaneous scrap sold at Wilmington, Del., which included about 200 tons of galvanized sheets, \$16.10, considered high, was obtained. A Harrisburg consumer is buying borings and turnings.

No. 1 heavy melting steel	\$19.00 to \$19.50
Steel rails, rerolling	21.00 to 22.00
No. 1 low phosphorus, heavy, 0.04 and under	23.00 to 24.00
Car wheels	23.00 to 24.00
No. 1 railroad wrought	25.00 to 25.50
No. 1 yard wrought	21.50 to 22.50
No. 1 forge fire	13.50 to 14.00
Bundled skeleton	13.50 to 14.00
No. 1 busheling	16.00 to 17.00
No. 2 busheling	13.00 to 14.00
Turnings (short shoveling grade for blast furnace use)	12.50 to 13.00
Mixed borings and turnings (for blast furnace use)	12.50 to 13.00
Machine-shop turnings (for rolling mill and steel works use)	14.00 to 14.50
Heavy axle turnings (or equivalent)	15.00 to 16.00
Cast borings (clean)	14.00 to 15.00
No. 1 cast	22.00 to 23.00
Grate bars	18.00 to 19.00
Stove plate	18.00 to 19.00
Railroad malleable	18.00 to 19.00
Wrought iron and soft steel pipes and tubes (new specifications)	19.00 to 19.50
Ungraded pipe	13.00 to 14.00

Birmingham

BIRMINGHAM, ALA., July 21.

Pig Iron.—The week closed with Birmingham pig iron firm at \$26.75 with all makers and a tendency upward. Doubt as to whether this schedule was being adhered to was dissipated by the sale of 10,000 tons in varying lots by one of the largest interests credited with disposition to go below the Redfield schedule. One lot of 7000 to 8000 tons was sold at this figure to a conservative buyer. A prominent interest sold 5000 tons at \$27.25. One lot of very high silicon brought over \$33. An interest, which steered clear of the business done under the Redfield schedule, has sold a handsome tonnage for third quarter at that level and is not pressing fourth quarter sales. The silicon differentials seem to be fairly well-maintained, although some business is probably done on fracture. A sale of 2500 tons of No. 1 foundry has been made by a producer outside of this district on the basis of \$28, Birmingham. All but one interest have booked practically entire third quarter output and have taken on considerable for fourth quarter. Inquiry for 1920 in the way of feelers has not resulted in opening books for that period. Iron masters, as a rule, expect higher prices. The tone is stronger than it has been since the buying movement began. The Sloss-Sheffield Steel & Iron Co. has blown in a third stack and the Republic Iron & Steel Co. a second. Alabama operators are stoutly resisting a proposed tax of 5c. a ton on coal and one of 3c. a ton on ore. Their representations have succeeded in at least a reduction of the proposed tax, and it is possible the general assembly may turn down the entire proposition. The Gulf States Steel Co. is resuming and will soon be in operation in all departments. The Southern iron melt is increasing. Stocks on Alabama yards do not embrace more than 75,000 tons of foundry, and there is no speculative iron. We quote per gross ton f.o.b. Birmingham district furnaces as follows:

Foundry, 1.75 to 2.25 silicon	\$26.75
Basic	24.75

Coal and Coke.—Producers of high-grade foundry coke are declining forward business owing to heavy bookings and prompt business is only such as is possible out of the day's run after contracts are cared for. The price is hard at \$9.

Cast-Iron Pipe.—Water pipe makers have advanced

the schedule to \$47 a ton, an increase of \$2. New business from municipalities is coming in with regularity. Stocks have been shipped and pipe is moved as made. Sanitary shops have all they can do.

Old Material.—The Southern scrap market represents the unique condition of being shut out of far-off markets by reason of freight rates and being unable to do much more than barely budge buyers of heavy melting steel at home. Dealers claim a deadlock on heavy steel, saying they are paying more for it than local consumers offer. Dealers are inclined to believe a large export movement in steel scrap via New Orleans will mature in the next 30 days. At present cast scrap is the only active commodity. We quote per gross ton f.o.b. Birmingham district yards, prices to consumers as follows:

Steel rails	\$14.50 to \$15.00
No. 1 heavy steel	14.00 to 14.50
Cast iron borings	8.00 to 8.50
Machine shop turnings	8.00 to 8.50
Stove plate	17.00 to 18.00
No. 1 casts	22.00 to 22.50
Car wheels	22.00 to 22.50
Tramcar wheels	21.50 to 22.00
Steel axles	22.00 to 23.00
No. 1 wrought	14.00 to 15.00

Buffalo

BUFFALO, July 21.

Pig Iron.—Although a few sizable inquiries are still coming in, small lots appear to be what is principally desired this week and the aggregate of inquiry has tapered off to a comparatively small total. Sales also reached only a very moderate total tonnage. One of the largest producers reports an aggregate of only 2,000 tons of all grades. With two of the larger interests sold to capacity practically to the end of the year and not seeking business, and with all having well-filled order books for that period, the situation is viewed with complacency by sellers and they are not booking forward into next year, preferring to await developments. There is a noticeable demand for the higher silicon irons, with very little available of the grades desired. This is accounted for by the fact that strikes in the high silicon districts are causing consumers in all parts of the country to look outside the regular districts to supply their needs, which is not possible in all cases. Prices are firmly held at the schedule for some time current, which is as follows, f.o.b. furnace, Buffalo:

No. 1 foundry, 2.75 to 3.25 silicon	\$29.75
No. 2X, 2.25 to 2.75 silicon	28.00
No. 2 plain foundry, 1.75 to 2.25 silicon	\$26.25 to 27.00
Gray forge	25.75 to 26.00
Malleable, silicon not over 2.25	27.25
Basic	25.75
Basic, 1 to 1½ per cent manganese	26.25
Basic, 1½ to 2½ per cent manganese	26.75
Bessemer	27.95
Lake Superior charcoal, regular grades, f.o.b. Buffalo	32.35

Finished Iron and Steel.—The sales agency of one of the larger independent wire mills has received instructions not to sell any more material at this time, due to labor shortage at the mill by reason of which it is able to operate only a portion of its capacity and the company does not feel like obligating itself to additional tonnage until the labor situation clears up. The sales department of a distributor of pipe has also been cautioned not to accept specifications for more than the monthly quota permitted by the contracts of its customers. Specifications have been heavier this week than for some time in structural material and bars and the tone of the market in these lines is strong. Canadian business is lagging. The agricultural implement manufacturers are very much disturbed by reports of crop failures in the Canadian Northwest due to the pronounced drouth which is prevalent.

Prices f.o.b. Buffalo are as follows: Steel bars, 3.40½c.; iron bars, 4.10½c.; shapes, 3.50½c.; plates, 3.70½c.; No. 10 blue annealed sheets, 4.60½c.; No. 28 black, 5.65½c.; No. 28 galvanized sheets, 7.00½c. For "store door delivery" add 0.04½c. to each commodity.

Structural Material.—The Lackawanna Bridge Co., Buffalo, has received the contract from the Donner-

Union Coke Corporation, Buffalo, for the fabrication and erection of 900 tons of steel for hoppers, also for foundry cupola and charging platform for Levering Bros., Buffalo, about 100 tons, and for two theater buildings at Binghamton, N. Y., 150 tons each. The Kellogg Structural Steel Co., Buffalo, has the contract for structural steel for alterations and additions to plant of the Alberger Pump & Condenser Co., Newburgh, N. Y., 100 tons; for addition to Sing Sing prison, Ossining, N. Y., 150 tons, and a theater building at Herkimer, N. Y., 100 tons. The contract for about 100 tons of structural for an addition to the varnish plant of the Pratt & Lambert Co., Buffalo, has been awarded to the Buffalo Structural Steel. Bids have been taken for 500 tons of structural for an elevator to be erected by the Southwestern Milling Corporation in Kansas City, Kans., by the Alfred E. Baxter Engineering & Appraisal Co., Buffalo, but the contract has not yet been awarded. The proprietor of the Buffalo Courier and Buffalo Enquirer, William J. Connors, has announced he will erect a 30-story building on the present site of his newspaper plant on Main Street, Buffalo, to cost \$1,500,000, which will require a large tonnage of structural steel.

Old Material.—The market exhibits a stronger tone in all lines, and the price for heavy melting steel is on the up-grade. It is now impossible to buy this commodity at \$17.50 in this district, the price spread having narrowed to \$18.00-\$18.50. There is now good local demand, as well as from territory outside the district, and consumers are finding it more difficult to place orders, as dealers are inclined to hang on to their stocks for higher prices; consequently there have not been any large sales of heavy steel. There is good demand for turnings and borings, particularly from outside districts, and No. 1 busheling is very active. Low phosphorus has advanced \$1 per ton and is now held at \$22 to \$23. Axle turnings and stove plate have advanced \$2 per ton; machine shop turnings, No. 1 busheling and bundled sheet stamping \$1 per ton; No. 1 railroad wrought to \$21 to \$22, and cast iron borings to \$13 to \$14. We quote dealers' asking prices, per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel, regular grades	\$18.00 to \$18.50
Low phosphorus, 0.04 and under	22.00 to 23.00
No. 1 railroad wrought	21.00 to 22.00
No. 1 machinery cast	22.50 to 23.00
Iron axles	26.00 to 27.00
Steel axles	26.00 to 27.00
Carwheels	22.50 to 23.50
Railroad malleable	19.00 to 20.00
Machine shop turnings	10.00 to 12.00
Heavy axle turnings	15.00 to 16.00
Clean cast borings	13.00 to 14.00
Iron rails	23.00 to 24.00
Locomotive grate bars	19.00 to 20.00
Stove plate	21.00 to 22.00
Wrought pipe	16.00 to 17.00
No. 1 busheling	15.00 to 16.00
Bundled sheet stamping	13.00 to 14.00

New York

NEW YORK, July 22.

Pig Iron.—Interest in the pig iron market has shown a revival during the past few days, both in sales and inquiries. An air brake company has purchased 6000 tons of foundry grades for last quarter. A valve manufacturer in Connecticut has purchased 5000 tons of No. 2 X, 500 tons of 8 per cent silicon pig iron and 100 tons of 50 per cent ferrosilicon. The largest inquiry in the market is for 20,000 tons of No. 2 X by a prominent scale manufacturer which has not usually purchased in this territory. This inquiry has aroused much interest in the market. The sales for export include 1500 tons by one firm and 500 tons for Italy by another exporter. While quotations remain about the same, there is a firmer tone. It is understood that the Virginia company which has been the lowest seller on the basis of \$26.50 for No. 2 X is now out of the market. In the Buffalo district, prices show increasing firmness. Some resale Buffalo No. 2 X iron which could be had last week at \$27 is now being held at \$28. We quote as follows,

delivered New York, for Northern and Southern grades, quotations on the latter being nominal.

No. 1 foundry, silicon, 2.75 to 3.25	\$30.80 to \$31.30
No. 2 X, silicon, 2.25 to 2.75	30.30 to 30.80
No. 2 plain, silicon, 1.75 to 2.25	29.80 to 30.30
No. 2 X, Virginia, silicon, 2.25 to 2.75	31.40 to 31.90
No. 1 Southern, silicon, 2.75 to 3.25	32.45
No. 2 Southern, soft (all rail), sil., 2.25 to 2.75	30.70
No. 2 Southern (all rail), sil., 1.75 to 2.25	29.45

Ferroalloys.—Quotations for standard ferromanganese have resolved themselves into a question of competition between American and British producers. The latter have again reduced their asking prices to \$105, seaboard, but American producers thus far have not met this quotation but still are asking \$115, delivered. It is probable that on any active inquiry American makers would sell at as low as \$110, delivered. It is argued that at this price there is an advantage in favor of the American producer when the question of freight from the seaboard is taken into consideration. A large American consumer was in the market recently for 5000 tons for delivery over the balance of the year, but it is understood that the inquiry has been withdrawn because of a conversion deal with an American maker. An interesting feature of the situation is the preference exhibited by certain consumers for the British over the American alloy because of the low silicon content of the former. Already several hundred tons of the British alloy have been sold to a Western consumer for this reason as well as for the fact that the carbon is higher. There have also been a few small sales and there are still a few inquiries in the market which stipulate the British alloy for the reasons given. The spiegeleisen market is strong and the alloy is rather scarce. For 18 to 22 per cent material \$35, furnace, is the quotation and there have been sales at these levels for both domestic account and export. The 50 per cent ferrosilicon market is stronger at \$80 per ton on contract. There have been sales of a few lots for early delivery. Consumers in England, Italy and some other countries have also been purchasers. Very little can be obtained below \$80, although some prompt delivery has been sold as low as \$75. The electric alloy, 15 per cent, is quoted at \$55, delivered. An American electric producer in Tennessee is reported to be doing a good business in 8 to 10 per cent electric alloy to consumers who cannot get the regular blast furnace Bessemer ferrosilicon because of strikes in Ohio districts. There are inquiries from German Austrian sources for silico-spiegel and also for spiegeleisen.

Finished Iron and Steel.—Except for plates, there is an increasing belief that by the last quarter there will be higher prices. At least one mill cannot take any more third quarter bar business. Another seller looks for higher steel bars rather than lower plates. The mills have quite generally advanced wire and wire nails, putting wire up \$2 a ton and wire nails \$5 a ton, thus increasing the spread between nails and wire to \$8 against the \$5 recently obtaining. The recent advance in bolts and nuts resulted in quite an inflow of business. Apparently a large number had been caught waiting a reduction and had to buy at the higher prices. The larger volume of the bolt and nut buying came from jobbers, who have now changed their discounts a matter of 10 per cent. The Eastern trade is watching with some interest the 2.50c. basis which is being obtained for bar iron in the West and one Eastern producer has named such a price. In steel bars a buyer offering a round lot claims that one mill has offered to sell for first quarter delivery next year at to-day's prices but this is not generally credited. The uniformly strong position of the market is indicated in a quotation practically accepted at this writing on upward of 1000 tons of plates for domestic use at 2.65c. One thousand tons of plates are in the market for a Southern shipbuilder but freights are against Eastern mills. The strong position of the fabricating field is shown by the records of the Bridge Builders and Structural Society, noted elsewhere, that in June 65 per cent of the capacity of the shops of the country was put under contract. We quote mill shipments as follows: Bar iron, refined grade, 2.62c.; double refined bar iron, 3.62c.; soft steel bars, 2.62c.; shapes, 2.72c.; plates, 2.92c.; all New York.

Warehouse Business.—Local jobbers now operating under a price equalization schedule with other nearby warehouse centers, including Boston, Philadelphia and Baltimore. The plan is similar to that long in effect in the Middle West and which has been somewhat in effect at these other Atlantic seaboard jobbing points. Consumers located intermediate will now have the advantage of equivalent prices from several warehouse districts, with the privilege of buying where promptest and best service can be given. Sentiment for a larger spread for warehousing is growing among the dealers, it being estimated by some that the cost of doing business has increased on an average about \$5 per ton in the past year; and price changes that will absorb this increase are looked for in the not distant future. Demand is reported rather inactive, the month of June in some cases being the best and in others the poorest since January, the result of the relative activity of different customers. The leading interest has reduced the discount on machine bolts, 38 x 4-in. and smaller, from 60 per cent to 50 per cent with corresponding adjustments on other bolts, turnbuckles, rivets and nuts, effective July 20. Quotations on box annealed black sheets and on galvanized sheets are still unpegged. Black sheets No. 28 gage are quoted at 5.37c., but as low as 5.10c. is reported to meet price-cutting. Galvanized, No. 28 gage, we quote at 6.50c. per lb.; but 25-bundle lots are bringing 6.25c. Other out-of-store prices are No. 10 blue annealed sheets, 4.57c.; steel bars, 3.37c.; structural shapes, 3.47c.; plates, 3.67c.; bands 3-16 in., No. 10 and 12, 4.07c.; shafting, net list.

Cast Iron Pipe.—The market shows some signs of firmness but remains untested, as no important municipal contracts are pending. Strikes are causing some annoyance. We quote New York prices as follows: 6-in. and heavier, \$50 to \$52.30; 4-in., \$53 to \$55.30; 3-in., \$60 to \$62.30 and \$1 additional for class A and gas pipe.

Old Material.—Sales representing actual demand are rather few, the chief transactions being of a speculative nature, showing the confidence of dealers in the future. Practically the only rise in prices is that of borings and turnings for blast furnace use, which have been marked up about \$1. Mills apparently realize that prices have been somewhat boosted by speculators and are seemingly holding off for prices to recede. Demand for wrought and cast scrap has fallen off. There is a fair demand for heavy melting steel. Prices which dealers and brokers are paying, New York, follow:

Old steel rails (or equivalent).....	\$15.50 to \$16.00
Heavy melting steel	14.50 to 15.00
Rerolling rails	17.50 to 18.00
Relaying rails, nominal	40.00 to 41.00
Steel car axles	24.00 to 25.00
Iron car axles	27.00 to 28.00
No. 1 railroad wrought	22.00 to 23.00
Wrought iron track	16.00 to 17.00
Forge fire	10.00 to 10.50
No. 1 yard wrought, long	18.00 to 18.50
Light iron	6.00 to 7.00
Cast borings (clean)	10.00 to 10.50
Machine shop turnings	10.00 to 10.50
Mixed borings and turnings	9.00 to 9.50
Iron and steel pipe (1 in. minimum diameter) not under 2 ft. long....	15.00 to 15.50
Stove plate	16.00 to 16.50
Locomotive grate bars	16.00 to 16.50
Malleable cast (railroad)	15.00 to 16.00
Old carwheels	20.00 to 20.50

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:

No. 1 machinery cast	\$23.00 to \$23.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	21.50 to 22.00
No. 1 heavy cast, not cupola size....	16.00 to 16.50
No. 2 cast radiators, cast boilers, etc.	17.50 to 18.00

President James A. Campbell of the Youngstown Sheet & Tube Co. announces a new warehouse and shipping building will be erected for the 84-in. plate mill to cost \$400,000. It will be equipped with electric cranes. The building will be in two sections, each 100 by 300 ft. Construction has already commenced.

The General Motors Corporation will soon purchase steel for additional units of its tractor plant at Janesville, Wis., including a foundry and a power house, requiring about 1500 tons.

Cincinnati

CINCINNATI, July 22.

Pig Iron.—Foundry iron for prompt shipment is becoming scarcer both in the Birmingham and Ironton districts. It is also stated that the situation is the same in Virginia. Quite a number of inquiries are out for first quarter shipment but so far no prices have been named, as the furnaces evidently believe they will get more money for the metal later on. An exception is noted in that a Lake furnace has quietly taken on a little business for first quarter delivery. However, the tonnage involved was very small and it is understood this furnace is not pushing sales for that shipment. A few furnaces in both the South and North are quoting above the last schedule, but this action was probably taken to discourage orders that could not be filled promptly. A northern Indiana melter purchased 2000 tons of malleable for this year's shipment but this is the only transaction in malleable of any size that has come to light in some time. Basic continues very dull, but no inquiry is out from melters in this vicinity. The silvery furnaces in Jackson County, Ohio, are still closed down on account of the recent strike. While these furnaces have some iron piled, they are not inclined to take on any new business and intend to use this metal to fill their old customers' requirements. It is reported that several idle furnaces in the South are planning to blow in at no distant date.

Based on freight rates of \$3.60 from Birmingham and \$1.80 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, silicon, 1.75 to 2.25 (base price)	\$30.35
Southern coke, silicon, 2.25 to 2.75 (No. 2 soft)	31.60
Ohio silvery, 8 per cent silicon.....	42.05
Southern Ohio coke, silicon, 1.75 to 2.25 (No. 2)	28.55
Basic, Northern	27.55
Standard Southern carwheel	51.60
Malleable	29.05
Lake Superior charcoal	\$32.35 to 33.35

Coke.—Some contracting for foundry coke is reported from all districts, but as usual Connellsville is leading in sales. A better inquiry for furnace coke is noted, but no recent contracts have been reported as closed. Connellsville furnace coke is still moving upward and quotations now range from \$4.25 to \$4.50 per net ton at oven. Foundry coke is quoted at \$5.50 to \$6. In the Wise County and Pocahontas fields 72-hr. coke is bringing from \$7 to \$7.50 at ovens, and New River quotations are from \$7.50 to \$8.

Finished Material.—An advance of 10 per cent has been made on machine bolts. Machine screws also are higher. A heavy demand is reported for steel pipe. Specifications for steel bars are also coming in at an improved rate. The jobbers are still selling nails at \$3.75 per keg base and report orders as being more numerous and as calling for larger quantities. A better demand for galvanized sheets has developed and prices are now firmer. No. 28 black sheets are quoted at 4.35c., Pittsburgh, and No. 28 galvanized at 5.70c., with a freight rate to Cincinnati of 23c. per 100 lb. Agricultural implement makers are contracting for soft steel bars to carry them through the last half. An improvement is noted in the call for hoops and bands.

The following are present local jobbers' prices: Steel and iron bars, 3.33c. base; bands, 4.03c. base; structural shapes, 3.43c. base; plates, 1/4-in. and heavier, 3.63c. base; No. 10 blue annealed sheets, 4.53c.; wire nails, \$3.75 per keg base.

High-Speed Steel.—Orders from machine shops are more numerous, and some firms feel more inclined to buy steel to fill their requirements a little further into the future. Standard brands are unchanged at \$1.50 per lb.

Old Material.—The steel mills are beginning to show more interest in obtaining further supplies of scrap, and while no large contracting is under way, a heavy buying movement is looked for at an early date. Nearly all prices have advanced. Heavy melting steel was marked up \$1.50 per gross ton. Cast borings are firmer and are now quoted at \$8.50 to \$9 per net ton. The foundries have lately been purchasing quite freely, mostly for early delivery. The following are dealers'

buying prices f.o.b. at yards, in carload lots, southern Ohio and Cincinnati:

Per Gross Ton	
Bundled sheet	\$13.00 to \$13.50
Old iron rails	22.75 to 23.25
Relaying rails, 50 lb. and up.	40.00 to 41.00
Rerolling steel rails	21.50 to 22.00
Heavy melting steel	17.50 to 18.00
Steel rails for melting	17.50 to 18.00
Old carwheels	19.00 to 20.00
No. 1 railroad wrought	19.00 to 19.50
Per Net Ton	
Cast borings	\$8.50 to \$9.00
Steel turnings	7.00 to 7.25
Railroad cast	22.00 to 22.50
No. 1 machinery	23.00 to 23.50
Burnt scrap	13.00 to 14.00
Iron axles	25.00 to 26.00
Locomotive tires (smooth inside)	18.00 to 18.50
Pipes and flues	14.00 to 16.00
Malleable cast	16.50 to 17.00
Railroad tank and sheet	13.00 to 13.50

St. Louis

St. LOUIS, July 21.

Pig Iron.—Buying continues in this market along the line of actual needs and therefore the quantities are not large and the deliveries do not extend, in many instances, beyond the third quarter, for both the buyers and sellers are not disposed to commit themselves for any long period. Consumers generally are disinclined to lay down any quantities in their yards beyond known needs and seem to have the opinion that there will be more favorable prices later in the year, while furnace representatives continue to hold their prices firmly. No shaking of the differential between Northern and Southern iron, due to the freight rates, has been effected for some weeks and in consequence the sales for the most part are of Northern iron, which has about \$2 the better of it in price laid down in the St. Louis district.

Old Material.—Scrap dealers continue to speculate, but the larger operators are inclined to take short profits whenever they appear and so prevent loading themselves up with an excessive quantity of material. The smaller dealers are doing most of the buying and have kept prices well up because of their disposition to take all material appearing at good prices. Buyers from the East and from Chicago are still absorbing scrap, thus putting the local market out of line with the rest of the country. Local consumers are staying out of the market. We quote dealers' prices, f.o.b. customers' works, St. Louis industrial district as follows:

Per Gross Ton	
Old iron rails	\$23.00 to \$23.50
Old steel rails, rerolling	24.00 to 24.50
Old steel rails, less than 3 ft.	21.50 to 22.00
Relaying rails, standard sections, subject to inspection	34.00 to 37.00
Old carwheels	24.00 to 24.50
No. 1 railroad heavy melting steel	19.00 to 19.50
Heavy shoveling steel	17.00 to 17.50
Ordinary shoveling steel	16.00 to 16.50
Frogs, switches and guards, cut apart	19.50 to 20.00
Ordinary bundled sheets	11.25 to 11.75
Heavy axle and tire turnings	13.00 to 13.50
Per Net Ton	
Iron angle bars	\$18.50 to \$19.00
Steel angle bars	17.50 to 18.00
Iron car axles	31.00 to 31.50
Steel car axles	29.00 to 29.50
Wrought arch bars and transoms	22.50 to 23.00
No. 1 railroad wrought	18.50 to 19.00
No. 2 railroad wrought	17.50 to 18.00
Railroad springs	18.00 to 18.50
Steel couplers and knuckles	18.00 to 18.50
Locomotive tires, 42 in. and over, smooth inside	18.50 to 19.00
No. 1 dealers' forge	15.50 to 16.00
Cast iron borings	10.00 to 10.50
No. 1 busheling	16.00 to 16.50
No. 1 boiler cut to sheets and rings	15.00 to 15.50
No. 1 railroad cast	23.50 to 24.00
Stove plate and light cast	18.50 to 19.00
Railroad malleable	16.50 to 17.00
Agricultural malleable	16.00 to 16.50
Pipes and flues	16.00 to 16.50
Heavy railroad sheet and tank	14.50 to 15.00
Railroad grate bars	18.00 to 18.50
Machine shop turnings	10.00 to 10.50
Country mixed	14.50 to 15.00
Uncut railroad mixed	16.00 to 16.50
Horseshoes	20.00 to 20.50

Finished Iron and Steel.—In finished products, there continues to be a gain in the volume of transactions small in themselves, but there has not been any large contracting ahead. Mill deliveries are so generally satisfactory, in relation to current needs here, that there seems no reason for the fabricators and contractors generally to commit themselves at present. The building situation is reported as generally improving with numerous alteration jobs and reports of new work reaching the finished specification stage in the architects' offices. Some interference with building is being felt as a result of the zoning law of the city recently passed which has held up about \$4,000,000 of large building because of the area and height requirements. Movement out of stock continues steady and of fair volume. For material out of stock we quote as follows:

Soft steel bars, 3.44c.; iron bars, 3.44c.; structural material, 3.54c.; tank plates, 3.74c.; No. 8 blue annealed sheets, 4.59c.; No. 10 blue annealed sheets, 4.64c.; No. 28 black sheets, cold rolled, one pass, 5.44c.; No. 28 galvanized sheets black sheet gage, 6.79c.

Coke.—No transactions of moment are appearing in coke and about all the contracts existing in this district for metallurgical coke have been renewed for a six months' period. Here, as in pig iron, there is no disposition to buy or sell far ahead and six months renewals have been the feature rather than yearly contracts.

Cleveland

CLEVELAND, July 22.

Iron Ore.—The ore market is dull, and dealers expect that the buying that will be done during the remainder of the season will be in the form of a scattering lot of orders spread over a number of weeks. Many furnace owners feel that they still have too large stock piles to consider taking on any additional ore. The largest sale reported during the week was a 60,000-ton lot to a West Virginia furnace. A canvass of Virginia consumers by a local selling agency indicates that they will not buy Lake ore this season unless they are assured of higher pig iron prices after Jan. 1. They claim that they cannot make a profit in manufacturing pig iron at present prices with the use of Lake ores. Manganiferous ore, which was in heavy demand last year, is a drug on the market this season, and some of this ore is being offered for resale. Ore prices, delivered f.o.b. lower Lake ports, are as follows:

Old range Bessemer, \$6.45; old range non-Bessemer, \$5.70; Mesaba Bessemer, \$6.20; Mesaba non-Bessemer, \$5.55.

Pig Iron.—Sales and inquiries fell off the past week, but some producers are still booking a fair volume of orders. One interest reports sales during the week aggregating 25,000 tons, nearly all in foundry iron. Of this, 6,000 tons was for the first half. While this producer is not seeking orders for that delivery, it is covering its regular customers with contracts at the present prices if they are anxious to buy now. An Indiana implement manufacturer has placed 5,000 tons of foundry iron for the last half with a Lake furnace, and the General Motors Corporation, which recently inquired for 7,000 tons of foundry and 4,000 tons of malleable iron, has divided its order between two Lake furnaces. Some shippers are reducing their stock piles, although in some cases iron has been held up because of labor troubles in foundries. The Southern pig iron market is now firm at \$28 for 2.25 to 2.75 silicon iron, and one Tennessee furnace has advanced its price \$2 a ton. This producer has changed the present differential to \$1 between the various grades, now quoting \$29 Birmingham for 1.75 to 2.25 silicon, and \$30 for 2.25 to 2.75 silicon. A Pittsburgh sanitary interest has purchased 600 tons of 2.25 to 2.75 silicon iron at \$28 Birmingham, and several small lot sales are reported at the same price. A serious shortage of silvery iron has developed because of the strike that has resulted in the shutting down of three of the four blast furnaces running on silvery iron in the Jackson County district. These furnaces have stock piles, but are not attempting to make shipments. Some foundries are purchasing small lots of silvery iron from the furnace

still operating, and others have been forced to borrow iron. We quote delivered Cleveland, as follows:

Bessemer	\$29.35
Basic	26.15
Northern No. 2 foundry, silicon, 1.75 to 2.25	27.15
Southern foundry, silicon, 2.25 to 2.75	33.00
Gray forge	26.15
Ohio silvery, silicon, 8 per cent	42.65
Standard low phos., Valley furnace	\$38.00 to 40.00

Coke.—New demand for foundry coke is not active, as most consumers are now covered with contracts. The market is a little firmer, a few producers having advanced their prices. We quote standard Connells-ville foundry coke at \$5.25 to \$5.50 per net ton at oven for prompt shipment and for contracts.

Finished Iron and Steel.—The finished steel market continues very active. A heavy tonnage was contracted for during the week by Central Western automobile builders, and a good volume of business came out in other contracts and current orders. The trade in this territory is now mostly under contract for the third quarter and last half, and is sending in heavy specifications on these contracts. Some consumers are specifying for all their material for the third quarter. To guard against price advances consumers are again asking for price protection on inquiries for material for specific work. The heaviest demand is for steel bars, but orders for structural material have improved, some of the fabricators placing liberal stock orders. The demand for plate is growing, and considerable export inquiry is coming out. Some mills are shading plate prices for export \$2 a ton, but regular prices on domestic business seem to be well maintained, and an Eastern mill is booking a fair volume of small lot orders for boiler steel in this territory at 2.75c. In rails an inquiry for 600 tons is pending for a traction line in Florida. In structural lines, the American Bridge Co. has taken 6000 tons for the Hanna building and annex, Cleveland, and 1000 tons for a building for the Youngstown Steel Car Co., Youngstown. The Russell Wheel & Foundry Co., Detroit, has taken 2000 tons for a building for the Detroit Edison Co.; the Bethlehem Fabricators, Inc., South Bethlehem, Pa., 500 tons for an office building for the National Malleable Casting Co., Cleveland, the McClintic-Marshall Co., 470 tons for the new Cleveland plant of the Colburn Machine Tool Co., and the Austin Co., Cleveland, 230 tons for a building for the National Candy Co., St. Louis. Bids will be taken next week for the county jail building in Cleveland, requiring 2100 tons. The demand for hard steel bars for reinforcing work continues good. The Cambria Steel Co. has advanced prices \$2 a ton for plain wire and \$5 a ton for wire nails, and bright and cement coated nails. The Youngstown Sheet & Tube Co. has made a similar advance on nails, and has advanced some other wire products. Warehouse prices are as follows:

Steel bars, 3.27c.; plates, 3.57c.; structural shapes, 3.37c.; bands and hoops, 3.97c.; No. 10 blue annealed sheets, 4.47c.; No. 28 black sheets, 5.27c.; No. 28 galvanized sheets, 6.62c.

Bolts, Nuts and Rivets.—Specifications for bolts and nuts on contracts are heavy. New orders are rather light, but most consumers are covered with contracts placed before the recent price advance. Deliveries at present are fairly good, but with the present volume of orders are expected to fall behind. Makers say that because of wage advances made in some departments during the past week or two, a further price advance may be necessary. Rivet manufacturers have as yet made no price advance, but the rivet market is very firm and makers are still talking of higher prices. The demand for rivets on contracts is heavy.

Old Material.—The market is very firm, and sharp price advances have been made on many grades. It is still a dealers' market, and there is very little inquiry from mills, which are not disposed to buy at present prices. Locally there is little activity, but there has been considerable demand from dealers during the past few days for material for shipment to Valley points. A Valley mill is offering \$21 for heavy melting steel, and a local producer has sold this grade to a dealer at

the same price, and as high as \$22 to \$22.50 has been offered by dealers for steel scrap delivered at Valley consuming points. Borings are in good demand for shipment to the Valley, and the supply is scarce, and some dealers are reported to be offering as high as \$15 for this grade. A Valley mill is reported to be offering \$19 for compressed steel scrap. A sale of heavy axle turnings to a Cleveland consumer has been made at \$18. Steel car axles have sold as high as \$33. We quote delivered consumers' yards in Cleveland and vicinity, per gross ton, as follows:

Heavy melting steel	\$20.50 to \$21.00
Steel rails, under 3 ft.	22.50 to 23.00
Steel rails, rerolling	24.50 to 25.50
Iron rails	27.00 to 28.00
Iron car axles	35.00 to 36.00
Steel car axles	33.00 to 34.00
Low phosphorus melting scrap	22.50 to 23.00
Cast borings	14.00 to 14.50
Iron and steel turnings and drillings	12.00 to 12.50
Compressed steel	18.00 to 18.50
No. 1 railroad wrought	23.50 to 24.50
Cast iron car wheels	24.00 to 25.00
Agricultural malleable	18.50 to 19.50
Railroad malleable	21.50 to 22.00
Steel axle turnings	17.50 to 18.00
Light bundled sheet scrap	15.50 to 16.50
No. 1 cast	23.50 to 24.50
No. 1 busheling	19.50 to 20.50
Drop forge flashings, 10 in. and under	17.50 to 18.50
Drop forge flashings, over 10 in.	15.50 to 16.00
Railroad grate bars	19.00 to 20.00
Stove plate	19.00 to 20.00

British Iron and Steel Market

Coke Advanced qs. per Ton—Business at a Standstill—American Basic Iron Sold

(By Cable)

LONDON, ENGLAND, July 21.

Coal has been advanced 6s. per ton and coke 9s. per ton. Meantime business is at a standstill pending price revisions of iron and steel. The industrial situation approaches a critical point and it is impossible to forecast the future.

American basic iron has sold at about £8 4s. (\$35.42 with exchange at \$4.32) c.i.f. Liverpool, and billets at £12 (\$51.84) c.i.f.

We quote per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalents figured at \$4.32 for £1, with the reservation that most makers have temporarily withdrawn prices:

Pig Iron:	£	s.	d.	£	s.	d.	
East Coast hematite .. 10	0	0	to 10	5	0		\$43.20 to \$44.28
West Coast hematite .. 9	12	6					42.14
Cleveland No. 3 foundry	8	0	0	8	5	0	34.56 to 35.64
Cleveland basic	8	5	0	8	10	0	35.64 to 36.72
Ferromanganese	25	0	0				108.00
Billets	13	17	6	15	0	0	59.92 to 64.80
Tin plate and sheet bars .. 13	7	6					57.75
Rails, 60 lb. and upward	16	0	0				69.12
							Cents per lb.
Steel bars	19	15	0				3.80
Large rounds, etc.	17	17	6				3.44
Structural material:							
Beams	17	0	0				3.27
Plates	17	15	0				3.42
Plates, boiler	21	0	0				4.05
Bar iron, stand. crown ..	21	0	0				4.05
Tin plates, 14 x 20, coke 1 ..	14	0					\$7.34
112 sheets, 108 lb., f.o.b. Wales.							

Pig Iron Demand Heavy—Serious Labor Demands—Belgian and American Competition

LONDON, ENGLAND, July 7.—The heavy demand for Cleveland foundry pig iron continues unabated and the market is very firm. Owing to unsettled conditions, makers are not eager to sell for forward delivery and it is almost impossible to obtain prompt foundry iron. Deliveries are also being held up because the car supply is so inadequate, and in some cases iron has had to be stocked, which consumers are anxiously awaiting. The holiday period should ease the situation some and possibly, in view of this, export licenses are being issued a little more freely, but only small quantities are being

shipped. Lower quality grades are comparatively plentiful, but there is not a great demand for these, and unfortunately furnaces are working rather irregularly, thus turning out an undue proportion of the lower grades. Prices for the home trade are strong but unaltered at 164s. for No. 1, 160s. for No. 3 Cleveland G.M.B. and No. 4 foundry and 157s. to 158s. for No. 4 forge. Export prices are 5s. per ton higher in each case. The hematite position does not seem to improve, the demand being, if anything, greater than ever, and the price for East Coast mixed numbers has been advanced 10s., making the home price £10 and export £10 5s. This increase has been expected for some little time, owing to the increasing costs of ore and production generally, but freights from Spain are now a little easier, and this process may continue. A fairly good quantity of hematite has been shipped to Italy recently and there is a strong general export inquiry, but licenses are still restricted.

In the finished iron and steel the output is still far from normal and labor is intensely restive. There is, however, a good domestic and export inquiry for shipbuilding material, especially for plates. The demand for lighter descriptions is moderately quiet.

As already cabled, a deputation of tinplate employers and workmen is shortly to visit America to study the conditions of labor in the industry and generally to investigate the manufacture of tin, terne, black plates and galvanized sheets there, as well as the competition of American makers. At the time of writing, however, there is further trouble with the men and the whole arrangement may be canceled.

The labor position here is still one of paramount importance and workers, thinking that they have obtained the upper hand, set no limit to their demands. A lockout is quite possible. As an instance of what is going on, the Leeds iron founders have handed in their notices to cease work owing to a dispute due to the employment of an ex-officer. The men contend that apprentices still in the army should first be demobilized and that it is contrary to the rules of the trade to accept apprentices above 16 years of age.

A new shipyard has been established on the Tyne at Hebburn with an area of 18 acres and accommodation for 10 berths capable of building the largest sized vessels.

It has been announced by the Northern Exploration Co. that further important territory in Spitzbergen to the extent of nearly 3000 sq. m. has been acquired in which coal and other valuable minerals have been found.

Some of the Belgian works, which were formerly offering steel for export, are now finding sufficient home demand to absorb their production. In any case, their efforts to do business abroad were evidently not very successful, as American competition completely cut them out in Eastern markets. Belgium's total output of steel at present is believed to be only about 25 per cent of normal.

The surfaces of two pieces of aluminum to be soldered together should be rubbed down with emery paper with a small quantity of vaseline, according to the *Revue générale de l'Electricité*. The flux may be made up as follows, according to a prescription given by the Soldering Association: Lithium chloride, 15 per cent; potassium chloride, 45 per cent; sodium chloride, 30 per cent; potassium fluoride, 7 per cent; bisulphate of soda, 3 per cent. The joint should be carefully brushed and washed in hot water to remove all traces of the flux.

No. 1 blast furnace of the Pittsburgh Steel Co. at Monessen, Pa., which has been out of blast for some time for relining and repairs, was lighted up on Monday, July 21 and will make basic iron. The company plans to blow out its No. 2 blast furnace at Monessen about August 15 for relining and repairs.

The new foundry and machine and blacksmith shop of the Truscon Steel Co., Youngstown, Ohio, built entirely of steel except the floors and foundations, which are concrete, is completed. Machinery will be installed at once. The building is 80 x 500 ft.

STRONG EXPORT TONE

Railroad Equipment a Noteworthy Item

Further Equalization of Ocean Freight Rates Needed—Higher Prices Talked

The July volume of export business is not yet up to that of June but the signs continue to indicate a general healthy development. There is less of the spectacular form of inquiry and instead great numbers of inquiries for small tonnages in themselves. It remains that there is much lost motion through the prevalence of many feelers not merely from those who have intention of buying sooner or later but from those who are merely hopeful of awakening the interest in some purchases.

The volume of business done in steel bars is noteworthy, as is also the maintained evidence of widely scattered sources of inquiries. Further needs for India, for example, have appeared. These indicate in part the apprehensiveness perhaps of getting satisfactory deliveries from England, yet many ocean freight rates still show a need of adjustment. For example, figuring even at a lower rate of exchange between England and the United States than now obtains, ocean freights to Calcutta are \$11.30 per ton cheaper from England than they are from the Atlantic coast, and \$12.30 cheaper to Bombay. To Kobe the difference in favor of England is \$10.90 and the difference in favor of Shanghai is \$10.40. While the difference for shipments to Valparaiso is \$10.20, the English rate to Rio de Janeiro is only \$2.60 less than the United States rate.

Railroad material looms large in the new business. A total of 6000 cars is wanted for France and 1050 for Cuba, while over 400 have already been bought, 380 of these for Cuba. The American Locomotive Co. has taken orders for 23 locomotives, 2 for Chile, 6 for the Argentine, 12 for Java and 3 for Formosa. Representatives of the Rumanian Government are now in this country arranging among other things to buy 25,000 tons of bridge work for that country.

As indicating the general character of the export market, inquiries include such items as: 100 tons of wrought and galvanized pipe for Spain; 500 tons of special shapes for England, following 100 tons recently bought; 300 tons of reinforcing bars and 3600 kegs of nails for Portugal; 1000 tons of steel bars for Italy and inquiries for tin plates, sheets and light rails for Japan.

The export trade has already noted the stiffer market in wire, one exporter being unable to get better than \$3.50 per keg for nails. The price which can be done on tin plate is not definite but the Pittsburgh quotation of \$7 per base box appears to be nominal and that \$6.75 could be done.

On 7000 tons of plates for Scandinavia an inquiry already mentioned, a quotation of 3.82c., delivered, was made on the American product, while an English quotation was 3.97c.

An authentic report is that late in June or early this month 20,000 tons of basic iron from Lorraine was delivered into Scottish ports at 160s., corresponding at that time to about \$37 per ton.

Some in the export trade are looking for higher prices. They have notified foreign representatives and foreign buyers that such is the increasing demand here that in 60 to 90 days prices may generally be higher, as much as \$5 per ton, except perhaps in steel plates.

British Measures Against American Steel Competition

The effect of the competition of American steel is manifesting itself in various ways in the British steel industry. The American Chamber of Commerce in London states that the rise of over £1 to £1 10s. (about \$5 to \$7.50) per ton anticipated from a recent meeting of finished iron masters at Birmingham has turned out to be only 10s. (about \$2.50), and the reason is generally understood to be the American competitive prices.

Rumors are about, the American Chamber says, that

the British steel makers are considering a boycott warning on British buyers of American steel to the effect that if they continue to buy steel abroad they need expect no more steel from British works. It is thought that such a move would overshadow the comparative advantage of the slightly lower American prices. Certain satisfaction is drawn from the fact that although there are many large offers of American steel talked about, small quantities have arrived. It is furthermore believed in some quarters that the rapid recovery of the American steel trade in other markets will cut down the amount of steel going to Great Britain, although the competition in overseas markets is likely to be more severe as a result.

Revised Tariff to United Kingdom

WASHINGTON, July 22.—A revised tariff just issued by the Shipping Board containing rates on more than 200 commodities from United States North Atlantic ports to the United Kingdom, include the following:

Steel billets	\$17.00 per ton (of 2240 lb.)
Steel, cold rolled, in boxes....	17.00 per ton
Steel hoops in coils.....	17.00 per ton
Steel rails, light, not over 30 ft. in length.....	17.00 per ton
Spelter	18.00 per ton
Pig iron	16.00 per ton
Agricultural implements	1.00 per 100 lb. or 50c. cu. ft.
Agricultural tractors	1.00 per 100 lb. or 50c. cu. ft.
Auto trucks	1.00 per 100 lb. or 50c. cu. ft.
Ball bearings	1.00 per 100 lb.
Bolts and nuts	20.00 per ton
Car wheels, loose.....	16.00 per ton
Forgings	17.00 per ton
Gas engines	1.00 per 100 lb. or 50c. cu. ft.
Machinery, up to 2 tons.....	1.00 per 100 lb. or 50c. cu. ft.
Magnetos .....	.75 per cu. ft. or 1 per cent ad valorem
Nails, wire	17.00 per ton (of 2240 lb.)
Pipe, 4 in. or under, outside measurement, iron or steel.....	17.00 per ton
Rods, wire, iron or steel.....	17.00 per ton
Scrap iron	16.00 per ton
Screws	20.00 per ton
Shovels	1.00 per 100 lb. or 50c. cu. ft.
Wire, in coils.....	17.00 per ton
Wire, packed in bbls. or cases.....	1.00 per 100 lb.
Wire netting	1.00 per 100 lb.
Wrenches	1.00 per 100 lb.

The heavy lift scale provides that for packages weighing over two tons and not exceeding three tons, 20c. per cu. ft. or 40c. per 100 lb. shall be added; between three and four tons, 30c. per cu. ft. or 60c. per 100 lb.; between four and five tons, 40c. per cu. ft. or 80c. per 100 lb.; between five and six tons, 50c. per cu. ft. or \$1.00 per 100 lb.; between six and seven tons, 75c. per cu. ft. or \$1.50 per 100 lb.; between one and 10 tons \$1.00 per cu. ft. or \$2.00 per 100 lb.

The rates apply to the ports of Liverpool, London, Manchester, Hull, Avonmouth, Bristol, Cardiff, Glasgow, Leith, Belfast and Dublin.

The capital stock of the Bessemer Limestone Co. has been increased from \$1,000,000 to \$3,000,000 and the name changed to the Bessemer Limestone & Cement Co. The company operates large quarries in Lawrence County, Pa., and supplies flux stone to blast furnaces. It will build a cement plant at Bessemer, Pa., to have a daily capacity of 300 bbl. John Tod, director of the Brier Hill Steel Co., is president, and Fred R. Kanengeiser is general manager.

Earnings of the Studebaker Corporation to the end of June for this year total more than \$4,200,000 net before taxes. On the basis of earnings for the first half year, the corporation's earnings for 1919 should be \$8,400,000 before taxes and \$7,500,000 after taxes. The Studebaker company produced about 17,000 cars during the first half of the year, and the output for the year is expected to be about 40,000 cars.

The Bethlehem Steel Co., Bethlehem, Pa., has filed notice in the offices of the Pennsylvania State Department at Harrisburg, of an increase in its indebtedness from \$742,500,000 to \$744,841,000. The Bethlehem Steel Corporation is listed in the notice as holding 1,299,955 of the 1,300,000 shares in the company. Charles M. Schwab is a stockholder in the company. R. E. McMath is secretary.

IRON AND INDUSTRIAL STOCKS

Trading Holds at a High Pitch Throughout the Week—Crucible Steel a Leader

NEW YORK, July 21.

A broad and active market was maintained the past week, with periods of strong speculative trading. Sensational advances were made by several industrial issues. Crucible Steel rose 17 points in a single day and showed strong fluctuation at times. The Stock Exchange was closed Saturday to allow clerical forces to recover from the rush of business. Today the market declined sharply due to unfavorable outlook in regard to labor. The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

Allis-Chalm. com. 44 1/4 - 47 3/4	Int. Har. pf. 117 - 119
Allis-Chalm. pf. 94 3/4 - 95	Lackaw. Steel .. 84 1/2 - 93
Am. Can com. 57 1/2 - 62 3/4	Lake Sup. Corp. 21 1/2 - 23 1/2
Am. Can pf. 104 3/4 - 105	Lima Loco. 76 - 84
Am. C. & Fdy. cm. 112 3/4 - 119	Midvale Steel ... 56 - 61 1/4
Am. C. & Fdy. pf. 116 - 117	Nat.-Acme 38 - 40 1/2
Am. Loco. com. 87 - 95 1/2	Nat. E. & St. cm. 78 - 82 3/4
Am. Loco. pf. 106 - 107	Nat. En. & St. pf. — - 102
Am. Radiator, cm. 325 - —	N. Y. Air Brake. 122 - 127 1/4
Am. Ship com. 130 - 134	Nova Scotia Stl. 80 1/2 - 90
Am. Ship pf. 89 - —	Penn-Seaboard .. 50 3/4 - 58
Am. Stl. Fdries. .. 42 1/4 - 46 3/4	Pittsb. Stl. pf. ... 96 - 97
Bald. Loco. com. 107 3/4 - 121 3/4	Pressed Stl. com. 89 - 92 1/2
Bald. Loco. pf. 106 1/4 - 107	Pressed Stl. pf. 106 - —
Beth. Stl. com. 97 3/4 - 102 3/4	Ry. St. Spg. com. 92 3/4 - 98 1/2
Beth. Stl. Cl. B. .. 96 1/2 - 109 3/4	Republic com. 93 - 102 3/4
Cambria Steel .. 125 - —	Republic pf. 105 - 105 1/4
Case, J. L. pf. 99 1/2 - 100 1/4	Sloss com. 69 - 74 3/4
Cent. Fdy. com. 30 - 35 3/4	Sloss pf. 94 1/2 - 94 3/4
Cent. Fdy. pf. 62 - 67 1/2	Superior Steel .. 45 3/4 - 48
Chic. Pneu. Tool 79 - 81 1/2	Transue-Williams 55 - 56 3/4
Colo. Fuel. 49 - 54 1/4	Un. Alloy Steel. .. 52 - 55 3/4
Cru. Steel com. 125 1/4 - 144 1/2	U. S. Pipe com. 31 - 36 1/4
Cru. Steel pf. 104 - —	U. S. Pipe pf. 68 3/4 - 70
Deere & Co. pf. 102 - 105	U. S. Steel com. 107 1/4 - 114 1/2
Gen. Electric ... 167 - 169 3/4	U. S. Steel pf. 116 3/4 - 117 1/2
Gt. No. Ore. Cert 46 1/2 - 50 1/2	Va. I. C. & Coke 66 - 67
Gulf. St. Steel. .. 65 - 75 3/4	Warwick — - 8 3/4
Int. Har. com. 138 - 144 3/4	Westingh. Elec. .. 55 3/4 - 59

Dividends

Taylor-Wharton Iron & Steel Co., quarterly, 1 1/4 per cent on the preferred, payable Aug. 1.
American Rolling Mill Co., quarterly, 75c. on the common and 1 1/2 per cent on the preferred, both payable July 15.
American Zinc, Lead & Smelting Co., quarterly, \$1.50 on the preferred, payable Aug. 1.
Cleveland-Cliffs Iron Co., quarterly, 2 1/2 per cent, payable July 25.
Gaston, Williams & Wigmore, quarterly, 50c., payable Aug. 15.
B. F. Goodrich Co., quarterly, 1 per cent on the common, payable Aug. 15.
Haskell & Barker Car Co., quarterly, \$1, payable Oct. 1.
Michigan Drop Forge Co., monthly, 15c. and 10c. extra on the common, payable Aug. 1.

Republic Deficit for Third Quarter

According to the report for the second quarter of the Republic Iron & Steel Co., there was a deficit of \$334,448, which may be contrasted with the 1918 year's surplus of \$4,410,474. That conditions are improving, however, would appear from the amount of unfilled orders on both finished and unfinished steel, amounting to 114,305 tons on March 31, 1919, which had increased to 187,361 tons on June 30. The net profits for the quarter, applicable to dividends, were \$510,916, and the provision for dividends totaled \$845,365. To take care of the present deficit there was a net surplus on Dec. 31, 1918, of \$35,122,462.

Net profits of the Art Metal Construction Co., Jamestown, N. Y., manufacturer of metal furniture, steel filing cabinets, metal partitions, etc., were \$317,306 in 1918, or \$2.18 a share, compared with a deficit of \$168,758 in 1915, when the war injured the business. Shipments for the year amounted to \$5,435,508, compared with \$3,387,212 in 1917.

To construct a by-product coke plant and to electrify its plants, the Sloss-Sheffield Iron & Steel Co. will issue \$6,000,000 of 6 per cent, 10-yr. notes, underwritten by the syndicate of Central Union Trust, Goldman, Sachs & Co., and Lehman Brothers.

Non-Ferrous Metals

The Week's Prices

Cents Per Pound for Early Delivery

July	Copper, New York		Tin, New York	Lead		Spelter	
	Lake	Electro- lytic		New York	St. Louis	New York	St. Louis
16.....	22.25	22.00	70.00	5.55	5.30	8.05	7.70
17.....	22.75	22.50	70.00	5.60	5.35	8.10	7.75
18.....	23.25	23.00	70.00	5.75	5.50	8.15	7.80
19.....	23.25	23.00	.....	5.75	5.50	8.20	7.85
21.....	23.75	23.50	70.00	5.75	5.50	8.25	7.90
22.....	23.75	23.50	70.00	5.75	5.50	8.35	8.00

NEW YORK, July 22.

All the markets except tin continue decidedly strong but demand is a little less active. Copper is again higher and demand is increasing. Quietness continues to characterize the tin market. Buying of lead is heavier and prices have been advanced all around. The zinc market continues to advance and the metal is scarcer. Demand for antimony is heavier and prices are higher.

New York

Copper.—Persistent demand from domestic consumers, coupled with a reluctance on the part of most producers to sell extensively, is reflected in still higher prices for the metal. In the last two weeks electrolytic copper has advanced about 1.75c. each week. Today electrolytic copper for early or July-August delivery is quoted, largely nominal, at 23.50c., New York. It is rather difficult to obtain the metal for this position, although some sales at around this level are reported. Most producers are quoting only for September delivery, for which they ask about 24c., New York. In a few cases some copper metal has been sold for October delivery but only to favored consumers, although inquiry from many sources for last quarter delivery is said to be frequent. Most Lake copper producers are well sold up for early delivery and quotations for this brand are nominal at 23.75c. to 24c. for this position. Export demand is good but not much is yet heard of definite inquiry from German-Austrian sources.

Tin.—The market has been very quiet the past week with practically only one day of activity. It is reported but not confirmed that last Thursday about 500 tons was sold, mostly for future delivery, at prices of about 50c. for future shipment from the East and about 51c. for shipment from England. These prices are low as compared with former ones, made possible largely because of the low present rate of exchange. Some buyers were evidently attracted by this condition while others were repelled. On July 18, Friday, 175 tons of Banca tin were sold for the Government at auction in various lots at 65.25c. to 67.25c. This metal was confiscated some months ago by the Shipping Board. It has already been offered for resale at 68c. It cannot be delivered for some little time because of red tape involved in the confirmation of the transactions. Quotations to-day are 51c. for future shipment from England, 51.50c. for July-August shipment from the Straits and 52.75c. for future shipment of Straits tin from England. American tin, 99 per cent, is quoted at about 66c. to 67c. with the pure tin at 69.50c. Spot Straits tin, from the allocated stocks in consumers' hands, is unchanged at 70c, New York.

Lead.—The market is strong and demand is active. On Friday the American Smelting & Refining Co. again advanced its price ¼c. to 5.75c., New York, or 5.25c., St. Louis, which we quote as the market. The outside market immediately followed the lead. According to some reports, independent sellers are obtaining as high as 5.90c. for August delivery, but it is still believed that the metal can be bought in quantity at the price of the leading interest.

Zinc (Spelter).—It is generally conceded that zinc has now become scarcer. At any rate prices have advanced daily until Prime Western for July-August de-

livery is quoted at 8c., St. Louis, or 8.35c., New York, with very little obtainable for that position. For September-October delivery from 8.10c. to 8.20c., St. Louis, is the prevailing quotation. While demand has slackened to some extent as compared with last week, interest on the part of consumers continues and the position is very strong. This is due not only to increased buying in the past few weeks but to considerably higher prices for ore in the St. Louis district.

Antimony.—Demand has increased and prices have advanced until wholesale lots for early delivery are quoted at 9.25c., New York, duty paid.

Aluminum.—Quotations for No. 1 virgin metal, 98 to 99 per cent pure, are unchanged at 32c. to 33c., New York, in wholesale lots for early delivery.

Old Metals.—The market is firm and advancing. Dealers' selling prices are nominally as follows:

	Cents per lb.
Copper, heavy and crucible	23.00
Copper, heavy and wire	22.00
Copper, light and bottoms	17.50
Brass, heavy	15.00
Brass, light	10.00
Heavy machine composition	20.00
No. 1 yellow rod brass turnings	12.50
No. 1 red brass or composition turnings	16.00
Lead, heavy	5.25
Lead, tea	4.25
Zinc	6.00

Chicago

CHICAGO, July 21.—Buying of copper has been general, some purchases being for large lots. Copper is now quoted at 24c., or 2c. above the price a week ago. Tin is marking time. There has been a strong demand for lead and it too has advanced. Zinc (spelter) has not been active in this market, but has gone up as the result of activity elsewhere. There has been more buying of antimony during the last 10 days than in any similar period for several months and it has advanced 1c. Old copper, brass, lead and zinc are also quoted at higher prices. We quote copper at 24c. for carloads; tin, 70c. to 72.50c.; lead, 5.70c. to 5.75c.; spelter, 8c. to 8.25c.; antimony, 10c. to 11c. On old metals we quote copper wire, crucible shapes, 18c.; copper clips, 17.75c.; copper bottoms, 15.25c.; red brass, 18c.; yellow brass, 12c.; lead pipe, 4.25c.; zinc, 4.50c.; pewter, No. 1, 35c.; tinfoil, 37c., and block tin, 45c., all these being buying prices for less than carload lots.

St. Louis

ST. LOUIS, July 21.—The non-ferrous markets have been quiet but firm during the week with lead in car lots closing at 5.50c. and zinc at 7.87½c. to 7.90c. In less than car lots the prices were: Lead, 6c.; spelter, 8.25 to 8.50c.; tin, nominal; copper, 18.50c. to 19c.; Asiatic antimony, 9c. In the Joplin district ores were firmer and higher as a result of the conditions in the metal market with zinc blende about \$2.50 higher for the top grades with lead up about the same amount. Calamine was also stronger. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 7c.; light copper, 9c.; heavy yellow brass, 11.50c.; heavy red brass and heavy copper and copper wire, 13.50c.; pewter, 35c.; tinfoil, 44c.; lead, 4.50c.; zinc, 4c.; tea lead, 3.50c.; aluminum, 18c.

Cincinnati

CINCINNATI, July 22.—The metals continue to advance. Crucible copper, copper wire and red brass are all now quoted at 17c. to \$17.50c. Light brass is around 7.50c. to 8c. Lead is stronger and dealers' prices are from 4.25c. to 4.50c. Aluminum cast scrap is also firmer around 22c. to 23c. Business in both copper and brass scrap is very brisk.

The Edgar M. Moore Co., Farmers' Bank Building, Pittsburgh, has been appointed Pittsburgh sales agent for the Watson Wagon Co., Canastota, N. Y., manufacturer of industrial trailers.

Prices Finished Iron and Steel, f.o.b. Pittsburgh

The prices below, except on nuts, bolts and rivets, are based on those announced at Washington by the Industrial Board on March 20, 1919, effective the following day, which since that date have largely governed market transactions, though there have been variations, as indicated in market reports on other pages.

Freight rates from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, with revisions effective Nov. 1, 1918, in carloads, to points named, per 100 lb., are as follows: New York, 27c.; Philadelphia, 24.5c.; Boston, 30c.; Buffalo, 17c.; Cleveland, 17c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; Denver, 99c.; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c.; Birmingham, 57.5c.; Pacific Coast, \$1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is \$1.315, minimum carload 40,000 lb.; and \$1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c.; minimum carload 46,000 lb.; Denver, 99c.; minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs:

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in. angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and Zees, structural sizes, 2.45c.

Wire Products

Wire nails, \$3.25 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of \$1.50, and shorter than 1 in., \$2.00. Bright basic wire, \$3.15 per 100 lb.; annealed fence wire, Nos. 6 to 9, \$3.00; galvanized wire, \$3.70; galvanized barbed wire and fence staples, \$4.10; painted barbed wire, \$3.40; polished fence staples, \$3.40; cement-coated nails, \$2.85 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 60½ per cent off list for carload lots, 59½ per cent for 1000-rod lots, and 58½ per cent off for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets, \$3.70 base
Large boiler rivets, \$3.80 base
¼ in. 5/16 in. and 7/16 in. diam., 60-10-5 per cent off list
Machine bolts, hp. nuts, ¾ in. x 4 in., 60-10-5 per cent off list
Smaller and shorter, rolled threads, 50-10-10 per cent off list
Cut threads, 50-10-10 per cent off list
Larger and longer sizes, 50-5 per cent off list
Machine bolts, c.p.c. and t. nuts, ¾ in. x 4 in., 45-10-5 per cent off list
Smaller and shorter, 40-10-10 per cent off list
Larger and longer, 40-10-10 per cent off list
Carriage bolts, ¾ in. x 6 in., 50-10-10 per cent off list
Smaller and shorter, rolled threads, 50-10-10 per cent off list
Cut threads, 50-10-10 per cent off list
Larger and longer sizes, 45-5 per cent off list
Lag bolts, 65 per cent off list
Flot bolts, Nos. 1, 2 and 3, 50-10-5 per cent off list
Hot pressed nuts, sq. blank, 3.10c. per lb. off list
Hot pressed nuts, hex. blank, 3.10c. per lb. off list
Hot pressed nuts, sq. tapped, 2.85c. per lb. off list
Hot pressed nuts, hex. tapped, 2.85c. per lb. off list
C.p.c. and t. sq. and hex. nuts, blank, 3.10c. per lb. off list
C.p.c. and t. sq. and hex. nuts, tapped, 2.85c. per lb. off list
Semi-finished hex. nuts:
¾ in. and larger, 70-10 per cent off list
9/16 in. and smaller, 80 per cent off list
Stove bolts in packages, 75-10-10 per cent off list
Stove bolts in bulk, 2½ per cent extra
Tire bolts, 60-10-10 per cent off list
All prices carry standard extras. Pittsburgh basis.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, \$52; chain rods, \$60; screw, rivet and bolt rods and other rods of that character, \$60. Prices on high carbon rods are irregular. They range from \$65 to \$75, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes 9/16 in. x 4½ in. and heavier, and small spikes, per 100 lb., \$3.35 in lots of 200 kegs of 200 lb. each or more; track bolts, \$4.35 per 100 lb. in carload lots of 200 kegs or more, and \$4.90 in small lots. Boat and barge spikes, \$2.85 per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh.

Terne Plate

Prices of terne plate are as follows: 8-lb. coating, 200 lb., \$12.80 per package; 8-lb. coating, I.C., \$14.10; 12-lb. coating, I.C., \$15.80; 15-lb. coating, I.C., \$16.80; 20-lb. coating, I.C., \$18.05; 25-lb. coating, I.C., \$19.30; 30-lb. coating, I.C., \$20.30; 35-lb. coating, I.C., \$21.30; 40-lb. coating, I.C., \$22.30 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars at 2.35c. from mill. Prices on bar iron are 2.75c.

Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card.

Steel				Iron			
Inches	Black	Galv.		Inches	Black	Galv.	
1½, ¾ and ¾	50½	24		¾ and ¾	29½	2½	
1½	54½	40		¾	30½	3½	
¾ to 3	57½	44		¾	34½	16½	
				¾ to 1½	39	23½	
Butt Weld				Lap Weld			
2	50½	38		1½	24½	9½	
2½ to 6	53½	41		1½	31½	17½	
7 to 12	50½	37		2	32½	18½	
13 and 14	41			2½ to 6	34½	21½	
15	38½			7 to 12	31½	18½	
Butt Weld, extra strong, plain ends				Lap Weld, extra strong, plain ends			
1½, ¾ and ¾	46½	29		1½	25½	10½	
1½	51½	39		1½	31½	17½	
¾ to 1½	55½	43		2	33½	20½	
2 to 3	56½	44		2½ to 6	34½	22½	
				7 to 8	26½	14½	
				9 to 12	21½	9½	

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers have been seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe have been nine (9) points lower (higher price).

Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh:

Lap Welded Steel		Charcoal Iron	
3½ to 4½ in.	40½	3½ to 4½ in.	—16
2½ to 3½ in.	30½	3 to 3½ in.	—1½
2½ in.	24	2½ to 3 in.	+1
1½ to 2 in.	19½	2 to 2½ in.	+10
		1½ to 1¾ in.	+20

Standard Commercial Seamless—Cold Drawn or Hot Rolled

Per Net Ton	Per Net Ton
1 in. \$327	1½ in. \$207
1¼ in. 267	2 to 2½ in. 177
1½ in. 257	2½ to 3 in. 167
1¾ in. 207	4 in. 187
	4½ to 5 in. 207

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots are as follows:

Blue Annealed—Bessemer

	Cents per lb.
No. 8 and heavier	3.50
Nos. 9 and 10 (base)	3.55
Nos. 11 and 12	3.60
Nos. 13 and 14	3.65
Nos. 15 and 16	3.75

Box Annealed, Ore Pass Cold Rolled—Bessemer

Nos. 17 to 21	4.15
Nos. 22 to 24	4.20
Nos. 25 and 26	4.25
No. 27	4.30
No. 28 (base)	4.35
No. 29	4.45
No. 30	4.55

Galvanized, Black Sheet Gage—Bessemer

Nos. 10 and 11	4.70
Nos. 12 and 14	4.80
Nos. 15 and 16	4.95
Nos. 17 to 21	5.10
Nos. 22 to 24	5.25
Nos. 25 and 26	5.40
No. 27	5.55
No. 28 (base)	5.70
No. 29	5.95
No. 30	6.20

Tin-Mill Black Plate—Bessemer

Nos. 15 and 16	4.15
Nos. 17 to 21	4.20
Nos. 22 to 24	4.25
Nos. 25 to 27	4.30
No. 28 (base)	4.35
No. 29	4.40
No. 30	4.40
Nos. 30½ and 31	4.45

PERSONAL

Col. C. H. Crawford, until recently assistant superintendent Eddystone plant Baldwin Locomotive Works, Philadelphia, has been transferred to South America as its Brazilian manager, with office in Rio de Janeiro. He is a member of the national board of directors of the American Association of Engineers and will serve as representative of the association in South America. His address will be: Caixa Postal 350, Rio de Janeiro, Brazil.

Capt. John T. Jans has joined the engineering forces of Holcroft & Co., foundry furnace and oven specialists, Detroit. Captain Jans was a member of the University of Michigan, class of 1912, and also has a master's degree from his alma mater. He was 21 months in France with the 16th Engineers and helped construct about 150 miles of standard gage railway and fought on the Argonne front.

Frank C. Thompson, president Carondelet Foundry Co., St. Louis, and Mrs. Thompson and several friends have gone to Buffalo, where they will start on a 1500 mile automobile trip through New England.

Lieut. Robert M. Jones, formerly of Youngstown, Ohio, now in the Philadelphia office of the Republic Iron & Steel Co., has just been notified that he was promoted May 10 from second to first lieutenant, while still in overseas service. He was mustered out a month ago. He was also awarded the inter-allied colors with the gold eagle to commemorate his services in the Loos-Argonne campaign.

At a meeting of the board of directors of the Wheeler Condenser & Engineering Co., Carteret, N. J., July 8, J. J. Brown, formerly vice-president and general manager, was elected president, succeeding Charles W. Wheeler, recently deceased. H. S. Brown, 50 Congress Street, Boston, was elected vice-president. No other changes were made in the officers. H. S. Brown has been associated with the Power Specialty Co., 111 Broadway, New York, for the past 15 years, the greater part of the time as New England manager. During the war he was active with the company's Government work with headquarters at Washington and Philadelphia. He is also president of the Brown-Ferries Co., Philadelphia. The business of the Wheeler Condenser & Engineering Co. has more than quadrupled during the past 10 years under the management of J. J. Brown and the manufacturing capacity of the plant has been correspondingly increased. One important addition has been the construction of a large tube mill for the manufacture of seamless drawn tubing of brass, copper and special mixture. In this mill the record output of nearly 1,000,000 pounds of condenser tubing in one month was recently made.

T. S. Disler, for some years traffic manager of the Fort Pitt Steel Casting Co., McKeesport, Pa., has also assumed the duties of purchasing agent. H. H. Nicholson, auditor of the company, hitherto has taken direct charge of purchases. Mr. Disler before becoming identified with the Fort Pitt Steel Casting Co. was a traveling freight agent for the Baltimore & Ohio railroad.

Charles S. Hogan and Ray E. Lawlor have been transferred from the home office of the Youngstown Sheet & Tube Co. to become salesmen in the Chicago and Detroit offices, respectively.

The board of directors of the Aetna Foundry & Machine Co., Warren, Ohio, has accepted the resignation of W. W. Ludt, Youngstown, Ohio, as director and Victor E. Rehr, general manager of the company, has been elected to fill the vacancy.

Will H. Brown, widely known in the automobile manufacturing industry, who recently returned from France, where he served as lieutenant colonel in charge of all motor transport of Base Section 1, A. E. F., has been appointed supervisor of purchases and material for Nordyke & Marmon Co., Indianapolis, manufacturer of automobiles and flour milling machinery. He

was a member of the liquidation commission in Paris, which had charge of the disposition of all material, including that surrendered by Germany.

William Schoup, for some years assistant superintendent of No. 3 open hearth department of the Homestead Steel Works of the Carnegie Steel Co., Homestead, Pa., has been appointed superintendent of the Franklin open hearth department of the Cambria Steel Co., Johnstown, Pa., and has entered upon his new duties. Mr. Schoup was connected with the Carnegie Steel Co. in various capacities since 1899. He has been succeeded by Allison R. Maxwell, who has been assistant metallurgist at the Homestead works.

Joseph W. Peters has resigned as secretary of the Engineers Club of St. Louis to join the selling forces of the Reeves & Skinner Machinery Co. of the same city. W. E. Rolfe, 305 City Hall, is acting secretary of the Engineers Club pending the naming of a permanent officer.

The Timken-Detroit Axle Co., announces the appointment of Col. Fred Glover as assistant general manager, effective Aug. 1. Colonel Glover, from 1907 to 1912, was general manager of the Gas Traction Co., Minneapolis. When that company was purchased by the Emerson Brantingham Co. in 1912, he was elected vice-president and acted in this capacity until December, 1917, when he resigned to go into Army service. He was made chief of the Motors and Vehicle Division of the War Department and held that position until after the signing of the armistice when he was made assistant director of sales of the War Department. He was recently discharged from the Army.

H. B. Clough has resigned as manager of the Kobe, Japan, office of the Pennsylvania Steel Export Co., Widener Building, Philadelphia, and Stephen B. Carr of the Philadelphia office, will sail for Kobe on July 24 to assume full charge of that branch.

Harry A. Boyd is acting as secretary and manager of the Mahoning Valley Employers' Association, Youngstown, Ohio, since the resignation of H. E. Herrod. Mr. Boyd was formerly one of the principal owners of the old Youngstown Engineering Co.

Luther Fawcett, formerly engaged with Fred Hubbard in the field engineering work at the Neville Island ordnance plant of the United States Steel Corporation, will enter the office of the county engineer of Mahoning County, Sept. 1. Mr. Hubbard has returned to the Ohio works of the Carnegie Steel Co. He was the chief civil engineer at Neville Island.

Elliot Reid, formerly assistant to general manager, has been made sales manager of the Westinghouse Lamp Co., New York.

W. L. Layton, for four years traffic manager of the New England Westinghouse Co., Springfield, Mass., has been transferred to the same capacity at the main works of the Westinghouse Electric & Mfg. Co., East Pittsburgh.

George Mesta, president Mesta Machine Co., Pittsburgh, will sail for Europe this week on a pleasure and business trip combined, to be gone until November.

Joseph E. Sweeny, Cincinnati, who has been in the Government service, has joined the sales force of the Ideal Concrete Machinery Co., Cincinnati.

Joseph G. Butler, Jr., vice-president Brier Hill Steel Co., will open in October a new art gallery erected at a cost of \$250,000. It will house at first his private collection of 80 paintings, all by American artists. The building, of Georgia marble, was built by Mr. Butler to serve the public.

Miss Kate Gleason, Trailer Car Co., Rochester, N. Y., sailed on the Noordam on July 16 for France, where she plans to remain several weeks.

H. A. Daniels, formerly manager of sales Baugh Machine Tool Co., Springfield, Mass., has become affiliated with the sales organization of the Cleveland office of Manning, Maxwell & Moore, Inc.

Charles G. Guild will succeed Clayton O. Griffin as secretary and service manager of the Wayne Oil Tank & Pump Co. Mr. Guild comes from the Burlington

Wheel Co., Burlington, Iowa, where he was manager. He was formerly manager of the Jenny Electric Light & Power Co., Fort Wayne, continuing with the General Electric Co. when a consolidation was perfected. In 1910 Mr. Guild accepted an offer from the Burlington Wheel Co. Mr. Griffin first came to Fort Wayne from Bradford, Pa., to assume the important executive position with the local company in 1909 and has been largely instrumental in bringing about the present success of the company.

Kay B. Knudsen has been appointed secretary of the New York chapter of the American Association of Engineers. He was graduated in engineering from Cooper Union, New York, in 1911. About four and a half years of his experience has been on railroad work, two years on sanitary and municipal work and one and a half years on building construction, subway construction and drainage work. For the past six months he has been employed as principal assistant engineer in the office of Alexander Potter, consulting engineer, New York.

L. W. Nichols has been appointed general manager of the Noble Motor Truck Co., Kendallville, Ind.; E. M. Sharp, production manager; C. W. Cole, sales manager for the western states, and J. W. Baird, sales manager of the central states. These men were all obtained from the Gary Truck Co., Gary, Ind. At the annual meeting of the Noble Truck Co. C. J. Munton was re-elected president; J. L. Hauff, vice-president and general superintendent, and G. M. Patterson, secretary-treasurer. In addition to these, two other directors were re-elected, Grant Roberts and A. M. Jacobs, and two new directors were chosen, B. S. Walters of Lagrange, Ind., and J. C. Fetter of Kendallville.

C. H. Vom Baur has resigned as vice-president T. W. Price Engineering Co., Woolworth Building, New York, and will soon establish an office for the sale of the Vom Baur electric furnace.

Roy M. Wolvin has been elected a director of Dominion Steel Corporation, Sydney, N. S., to fill a vacancy. Mr. Wolvin has been identified with Lake shipping for several years. H. J. McCann has been appointed assistant to Mark Workman at the Montreal offices.

Roland S. LeBarre, assistant manager of sales, Carnegie Steel Co., Cleveland, has been appointed general sales manager in charge of the alloy steel department of the Interstate Iron & Steel Co., Chicago.

Richard Jones, Jr., general counsel of the Republic Iron & Steel Co., Youngstown, Ohio, was recently elected vice-president of the Harvard Alumni Association.

Mr. Replogle Testifies on Allocation Policy

WASHINGTON, July 22.—Although no decision is promised in less than two weeks, Col. Edward S. Malone has been assigned by the War Department's board of contract adjustment to write a report on the question of allocations by the War Industries Board in the claim of the Mississippi Valley Iron Co. arising out of such allocations. A similar report in the case of the Lackawanna Steel Co. is being written by Col. Joseph Fairbanks.

The board heard considerable testimony in both cases. Among those who appeared in the Mississippi Valley case was J. Leonard Replogle, who was chief of the Steel Section of the War Industries Board and therefore responsible for the carrying out of the allocation policy. He testified that the policy was not binding on the Government, having really been worked out by the steel men themselves. W. J. Gruss, assistant to H. G. Dalton, chairman of the Steel Institute's committee on pig iron, iron ore and lake transportation, Maj. W. A. MacCleary, who represented the Ordnance Department on the steel commodities section of the War Industries Board, and Edward F. Goltra, president of the Mississippi Valley Iron Co., also testified in the latter's case. In the claim of the Lackawanna Company, the witnesses were James B. Bonner, vice-chairman of the subcommittee on steel distribution of the board, Charles Robinson, a vice president, and F. H. Burnett, general purchasing agent of the company.

OBITUARY

COL. JAMES KILBOURNE, president Kilbourne & Jacobs Mfg. Co., Columbus, Ohio, whose death on July 7 was announced in THE IRON AGE last week, was a man of broad culture and deep sympathies. He was a graduate of Kenyon College, Ohio, with the degrees of A.B. and A.M., from Harvard with the degree of LL.B., and later received the degree of LL.D. from Kenyon. When the Civil war broke out, he was offered a commission from the Governor of Ohio, but with his characteristic democratic spirit, refused it and enlisted with the 84th Ohio Volunteer Infantry and won his way to a captaincy. He was brevetted colonel for gallant and meritorious service. He was an active and constructive force in business and public life in Ohio from early manhood. He was devoted to his workmen and his personality radiated fellowship and good will to every one who came in contact with him. In his last public appearance before the employees of his plant, he said that the old poem of Abou Ben Adhem had stuck to him all his life and that he wanted to be remembered by the lines he quoted, ending with the words: "I pray thee then write me as one that loves his fellow-men."



COL. JAMES KILBOURNE

HENRY MAY, vice-president Western Foundry & Sash Weight Co., St. Louis, died last week at the age of 58 years after an illness of several months. Mr. May had been an executive of the foundry company for more than 30 years.

PETER KLAUER, president Klauer Mfg. Co., Du-buque, Iowa, sheet metal ceilings, died July 8.

Director of Sales Hare Sails

WASHINGTON, July 22.—After delaying his trip to confer with Assistant Secretary of War Crowell, who has just returned from Europe, C. W. Hare, Director of Sales of the War Department, sailed yesterday to establish an organization on the other side of the Atlantic to take care of the disposition of the surplus property of the American Expeditionary Forces. The work of disposing of this surplus has been complicated by a long list of difficulties, including the unwillingness of some of the European governments to permit the free disposition of this property while bidding insufficiently themselves for it. Many millions of dollars' worth of property are involved, and the new organization is to make a more effective search for markets. The property will be disposed of in neutral countries, if necessary, to realize a proper percentage of its value. There has been even a suggestion that some of it might find its way into Germany, although Secretary Baker has declined to discuss that contingency.

Director Hare took a considerable staff with him to start the new organization. Alfred LaMar was designated as machine tool expert.

After being idle for a long period, the Robeson Iron Co., Ltd., Robeson, Pa., last week put its modern stack, producing 1400 tons of iron a week, in operation. Employment is given to 175 additional iron workers.

The International Harvester Co. is fencing in 20 acres adjacent to its Plano works, West Pullman, Ill., as a site for a large addition, the plans for which are now being drawn.

Machinery Markets and News of the Works

HEALTHY EXPANSION SEEN

Labor's Attitude Creates Uncertainty

Advance in Lathe Prices Considered Probable Because of Greater Costs

The markets, viewed as a whole, present an appearance suggestive of good demand indicating an expansion of industrial activity of a healthy character, expansion which may be proceeding slowly in some districts, but which, nevertheless, appears to be sure. If there are fears of what the near future may bring they are founded chiefly on what the attitude and action of labor may be. Here and there are reported labor shortages, and it may be repeated that to this condition may be traced a considerable part of the new activity which has come to New England which has many shops notable for the production of automatic machinery. In Chicago employees of several companies manufacturing gears are on strike, and in the building trades there is a lockout.

In the New York market a better undertone exists. Detroit continues very busy. Chicago conditions are a little irregular, but the trade is nevertheless doing well. In Milwaukee operations are proceeding at a satisfactory rate, with the makers of milling machines busiest.

New York

NEW YORK, July 21.

A slightly better undertone is discernible in the demand for machine tools, this being traceable in some instances to the better conditions which prevail in other districts, especially New England. In the latter district, and quite generally elsewhere, labor-saving machinery, both standard and special, is in decidedly greater demand as a result of employers feeling the shortage in labor and foreseeing a still greater stringency. An illustration of the situation is presented by the lively demand which has sprung up for lifting magnets at a time when the makers were not looking for renewed activity.

Local demand continues rather spotty. No large lists have been received in the past week or two, but a considerable number of sellers report a good scattered demand, the buyers taking one or two or three machines each. Makers of plumbing goods, encouraged by the better building outlook, have been buying a few tools.

Export inquiries are numerous, but so many of these have failed to materialize that at least some of them are not figured on with enthusiasm. Shipment on quite a desirable order for tools bought for English use has been indefinitely postponed because of the low rate of exchange.

On July 18, sterling cables closed at \$4.39, and on the preceding day sterling rate dropped as low as \$4.26%. It is admitted on all sides that the international money situation is a detriment to export business and that the chief problem in exporting is one of financial arrangements which the banks alone can adjust.

From the representative of an English valve manufacturer now in this country it is learned that Japan is active in the British market and is offering valves laid down in England at a lower price than English manufacturers can make them. The same authority states that the Japanese have appropriated the toy trade which the Germans formerly possessed in Great Britain and are selling ingenious and well-made toys at extremely low prices.

The Standard Oil Co. of New Jersey has placed orders for six traveling cranes for which it recently inquired. It

The small-lot demand in Cleveland is active. Cincinnati conditions are good.

Builders of lathes are pointing to their increased costs, especially of labor, and the trade is rather expectant that the price of these and of other tools will be advanced in the near future, especially in cases where quotations were reduced since Jan. 1.

Among the interesting prospects in the New York territory is the statement that the Ordnance Department, United States Army, has plans prepared for an aviation station on Staten Island, N. Y., which will include a shop. The total cost of the station will be in the neighborhood of \$1,000,000.

The Hanson-Whitney Mfg. Co. has been organized in Hartford, Conn., to design and manufacture machines, the incorporators being B. M. W. Hanson, Clarence E. Whitney and F. W. Young. Mr. Hanson, who was once with the Pratt & Whitney Co., is president of the new company. Mr. Whitney, president of the Whitney Mfg. Co., is treasurer. Mr. Young, formerly superintendent of the Colt plant at Meriden, in charge of Browning gun production, is secretary and general manager.

John E. Throop's Sons Co., Trenton, N. J., builders of special machinery, will erect a new machine shop, 70 x 300 ft.

The Dalton Mfg. Co., New York, maker of lathes, will build a plant at Sound Beach, Conn.

bought two 30-ton, two 20-ton and two 10-ton cranes for delivery to its Bayway, N. J., shops. The American Locomotive Works, reviving an old inquiry, has purchased one 50-ton overhead crane for Schenectady and another of the same capacity for its Brooks works.

The Liberty Electric Corporation, Port Chester, N. Y., is in the market for a few tools. The company manufactures wireless apparatus.

The Magnetic Motors Corporation, 1 West 142nd Street, New York, Alfred W. Burke, president, has leased a one-story building to be erected at 12-18 West 143rd Street, for occupancy. The structure will be 99 x 100 ft.

The Inter-Ocean Metal Corporation, New York, has been incorporated with a capital stock of \$20,000 by M. M. Corcoran, G. Cohan and A. Heymsfelt, 138 Fifth Avenue, to manufacture metal specialties.

The Wilson Welder & Metals Co., 2 Rector Street, New York, has increased its capital from \$100,000 to \$500,000.

The Lion Brewery, 100 West 108th Street, New York, will make improvements in its one-story wagon shop, 35 x 100 ft., at 100-102 West 108th Street, to cost \$6,000.

The Atlantic Chain Corporation, New York, has been incorporated with a capital stock of \$60,000 by H. Grill, M. Birnkrant and J. Stinch, 168 Madison Street, to manufacture chains, etc.

Crump & Lungren, Inc., New York, has been incorporated with a capital stock of \$20,000 by B. E. Crump, H. T. Lungren and H. B. Weil, 160 Broadway, to manufacture metal products.

The Ordnance Department, United States Army, Washington, is having plans prepared for a new aviation station on Staten Island, including shops and buildings, to cost about \$1,000,000.

The Press Machine Corporation, New York, has been incorporated with a capital stock of \$30,000 by S. T. Walkup, A. F. Lafrentz and A. E. Sheridan, 1451 Broadway, to manufacture machinery.

The Machinery Merchants, Inc., 50 Church Street, New York, has filed notice of change of name to Morey & Co., Inc. It recently increased its capital from \$100,000 to \$250,000.

The Wappler Electric Co., Inc., 173 East Eighty-seventh Street, New York, has awarded a contract to the Turner Construction Co., 244 Madison Avenue, for its proposed three-story reinforced-concrete plant on Harris Avenue, near the Queensboro Bridge, Long Island City.

The Twinomatic Machine & Tool Co., Brooklyn, has been incorporated with a capital stock of \$150,000 by M. L. Burridge, B. Leavitt and A. S. Pinkus, 1674 Bryant Avenue, to manufacture machinery and tools.

The Ampyr Mfg. Co., New York, has been incorporated with a capital stock of \$25,000 by M. D. Reardon, R. Singer and M. Rothman, 299 Broadway, to manufacture machinery.

The American Can Co., 120 Broadway, New York, has awarded contract to the Turner Construction Co., 244 Madison Avenue, for its proposed three-story and basement, reinforced-concrete plant, 220 x 242 ft., at Portland, Me. A three-story concrete office building, 40 x 112 ft., will also be erected. The new works are estimated to cost \$500,000, instead of \$300,000, as previously announced.

The Reed Iron Works, Inc., New York, has been incorporated with a capital stock of \$25,000 by J. A. Netzel, R. Adams and A. F. Mulvihill, 52 Hamilton Terrace.

The Universal Condenser Corporation, New York, has been incorporated with a capital stock of \$100,000 by P. G. Chichester, 1334 Dean Street, Brooklyn; E. Nolan, 46 Manhattan Street, and D. T. Howell, 945 East 180th Street, to manufacture condensers, etc.

The Metricaphlance Corporation, New York, has been incorporated with a capital stock of \$20,000 by A. W. Franklin, M. B. and D. B. Kessel, 47 West 112th Street, to manufacture electric meters.

The American Radiator Co., 104 West Forty-second Street, New York, has acquired property on Newtown Creek, Laurel Hill, Long Island, extending to the Long Island Railroad, with adjoining plot on the Laurel Hill Boulevard, for a total consideration said to be \$140,000, as a site for a six-story works.

The Victory Tire & Rubber Co., 385 East 149th Street, New York, has increased its capital from \$300,000 to \$750,000. Notice of change of name to the Rydon Tire & Rubber Co. has also been filed.

The Brunner Mfg. Co., Utica, N. Y., manufacturer of air compressors and kindred equipment, has had plans prepared for a one-story addition, 76 x 140 ft., to cost \$15,000.

The John S. Tilley Ladder Co., Watervliet, N. Y., has had plans prepared for a one-story addition, 90 x 90 ft. Herman Gaffer is manager.

The Board of Managers, Potsdam Normal School, Potsdam, N. Y., will build a new boiler plant at the institution. Lewis F. Pilcher, state architect, Capitol Building, Albany, is in charge.

The Key Bolt Appliance Co., East Orange, N. J., has been incorporated with a capital of \$250,000 by Harry H. Pickering, Charles O. Guyer and E. R. Coburn, to manufacture bolts and forgings.

The P. S. Townsend Co., West Orange, N. J., has been incorporated with a capital of \$500,000 by S. Percy Townsend, Ralph E. and Ernest C. Lum, to manufacture lawn mowers, etc.

Benjamin Buckley's Son, Inc., Paterson, N. J., has been incorporated with a capital stock of \$10,000 by Homer A. Tiffany, J. Vincent Barnitt and others, to manufacture machinery.

The Singer Mfg. Co., Elizabethport, N. J., has awarded contract to the Turner Construction Co., 244 Madison Avenue, New York, for a three and four-story foundry, 176 x 252 ft., at its sewing machine works.

The Myers Auto Pump Co., Paterson, N. J., has been incorporated with a capital stock of \$100,000 by G. F. Myers and E. M. Culp, to manufacture automobile pumps.

The Magneto Generator Starter Electric Co., Jersey City, N. J., has been organized to manufacture electric starters for automobile and other services. Andrew J. Weger, 2527 Boulevard, heads the company.

Gustave Schoener, Newark, N. J., has filed plans for the erection of a brick foundry at 80-84 Newark Street.

The Method Utilities Co., Newark, N. J., has been incorporated with a capital stock of \$100,000, by Roman von Fabrice, Newark and Joseph Herr, Metuchen, N. J., to manufacture refrigerating machinery.

The Die Casting Co. of New Jersey, 16 Washington Avenue, Irvington, N. J., has increased its capital from \$100,000 to \$200,000.

Kell Mock & Co., Newark, N. J., have been incorporated with a capital stock of \$75,000 by Jacob and David Kell, and Joseph Mock, Jr., to manufacture automobile parts, etc.

Philadelphia

PHILADELPHIA, July 21.

L. H. Gilmer & Co., Cottman and Keystone streets, Philadelphia, manufacturer of leather belting, etc., are taking bids for a two-story plant addition, 60 x 70 ft.

The Wright Mfg. Co., 131 Master Street, Philadelphia, manufacturer of metal goods, is taking bids for a one and two-story addition 40 x 88 ft., and 36 x 54 ft., respectively.

The Wright Roller Bearing Co., Twentieth Street and Indiana Avenue, Philadelphia, has filed plans for a one-story addition 26 x 80 ft.

The John E. Thropp's Sons Co., Trenton, N. J., manufacturer of tire-making molds, special machinery, etc., has awarded contract to S. W. Mather & Sons, Greenwood Street, for its proposed machine shop, 70 x 300 ft., with 25-ft. balconies. The main floor will be equipped for general machine work and the balcony for light manufacturing. The installation will consist of an electric traveling crane, about 10-ton capacity, boring mill, planer, lathes, etc. Plans have also been prepared by J. Osborne Hunt, architect, 114 North Montgomery Street, for a new foundry of about 40 tons of castings per day. The construction of this building will be deferred, it is understood, pending the building of a new railroad line on Commercial Avenue.

The Hard Rubber Mills, Inc., Trenton, N. J., has been incorporated with a capital stock of \$300,000 by George Maurer, Alen C. Doig and Laurence Aldrich to manufacture rubber products.

Dick Brothers, Inc., 120 Penn Street, Reading, Pa., manufacturer of steam fittings, pipe, etc., has acquired the three-story factory of the Reading Hardware Co., Third and Buttonwood streets, for a new works. George W. Miller is president.

The Pennsylvania Railroad has commenced the erection of an addition to its car repair shops at Columbia, Pa. Following the completion and equipping of the extension, it is said that about 100 additional men will be employed.

The Leggett Creek Colliery, Scranton, Pa., formerly the property of the Hudson Coal Co., has been acquired by new interests headed by J. J. Burton, president Treverton Colliery Co., Cleveland, Ohio, for a consideration said to be about \$4,000,000. The new owners are said to be planning extensive operations.

The fully-equipped foundries of the American Brake Shoe & Foundry Co., 30 Church Street, New York, at Cory and Uniontown, Pa., are being offered for sale. Both buildings are one-story, the first noted containing about 16,000 sq. ft. of space, and the second, 28,000 sq. ft.

The East Penn Foundry Co., Macungie, Pa., has commenced the erection of an addition, and plans are under way for another extension. It is proposed to provide facilities and equipment for the employment of about 100 additional men by early fall.

The Capital City Iron & Steel Co., Harrisburg, Pa., is being organized by Charles L. Bailey, Jr., and associates, and application for incorporation will soon be made. The company will manufacture iron and steel specialties.

To handle increased orders, the Davies & Thomas Foundry & Machine Co., Catasauqua, Pa., manufacturer of iron and steel castings, with plant on Race Street, has inaugurated a double-time schedule at the works, effective July 14.

The Philadelphia & Reading Railroad has inaugurated a 48-hr. week at its car construction and repair shops at Reading, Pa., replacing a 44-hr. week as operative recently. There is a large amount of work on hand at the shops, particularly in the matter of repairs to coal cars.

Harry Read, York, Pa., is having plans prepared by J. A. Dempwolf, architect, Cassatt Building, for a new local industrial plant, to consist of machine shop, foundry, iron-working and erection shop, office and miscellaneous structures. A housing development for employees at the new works is also planned.

The F. H. Reichard Mfg. Co., Bangor, Pa., maker of farming implements, has started work on a two-story addition to its plant, 46 x 104 ft., estimated to cost \$12,000. The company states it is in the market for wire-forming machines and other equipment.

The Wainock Garage Co., Philadelphia, has been incorporated by William A. Mundy, 516 Thirty-sixth Street; Charles A. Mundy, 227 Thirty-ninth Street, and others, to operating a garage and machine shop. The capital stock is \$10,000.

The United Engine & Mfg. Co., Hanover, Pa., has increased its capital and indebtedness. Capital stock will be increased from \$20,000 to \$150,000 and its indebtedness from nothing to \$25,000. A. S. Trone is secretary.

New England

BOSTON, July 21.

Most of the industrial centers of New England are bare of unused manufacturing space, and as a consequence there is promise of considerable building of new shops, factories and additions to present plants. A number of great buildings for rental to manufacturers are projected, and some of them will be built this year. Much of their space has been contracted for in advance at rentals which will take care of the increased investment made necessary by present costs of building. Many companies prefer to rent rather than to build, some of them because they require limited floor space, and others because they are new and prefer to make no plans for the future until success is assured. Many of these small industries are starting up, a large part of them in metal lines. In fact there is what may be termed an accumulation of such enterprises, for in the period of the war few of them had the chance to make a beginning, because capital did not encourage them, equipment was costly and hard to get at any price, labor was scarce, and the Government frowned upon such attempts unless they had directly to do with war work. Since hostilities ended they have gone forward. Their total requirements in the next year will be no inconsiderable item in the machinery trade. Many of them will occupy new industrial buildings. This type of factory is common enough in cities such as Providence, where there are so many manufacturing jewelers, and in Worcester, with its wide variety of manufacturing industry which is constantly being added to. Another big item in the future machinery market is one which the observers a year ago did not look to as a buying factor immediately following the war. This is made up of the plants which were presumed to be extending capacities to such an abnormal degree that it would be a long time under the ordinary conditions of peace before their business would catch up with established facilities. As it turns out the case is rare where owners feel that their works are too large, either for present business in lines where demand has been very active, or for the business which is expected and the beginning toward which has already been made. Probably the next year will see not a few of these works receiving still other extensions.

The supply of surplus skilled help in the New England territory has become very small. The labor bureaus report that unskilled labor is fairly plentiful, but that the skilled is becoming scarcer, though it is still possible to get good men in limited numbers. Considering that some of the machine shops are operating with reduced forces the reserve strength of the labor market is not great. Others of the shops, including some of the machine-tool establishments, are maintaining fuller working forces but are running on reduced hours. But in all of these cases business is better than it was several months ago, and production has increased accordingly.

The Crompton & Knowles Loom Works, Worcester, Mass., will spend \$50,000 to increase the storage capacity of iron and coke at its foundry.

The foundry at Otter River, Mass., owned and operated by Lord, Stone & Co., has been purchased by William L. Shaughnessy and Joseph P. Carney of the William L. Shaughnessy Co., Gardner, Mass., manufacturer of casket hardware, and will be run hereafter as the Otter River Foundry Co., which will be incorporated with a capital stock of \$50,000. The officers will be: President, Fred B. Sharron, Otter River; treasurer, Mr. Shaughnessy, and clerk, Mr. Carney. The Otter River foundry has manufactured stoves for years, and the new owners will continue the industry.

The Hanson-Whitney Mfg. Co., Hartford, Conn., has been organized by B. M. W. Hanson, Clarence E. Whitney and F. W. Young with a capital stock of \$100,000 to design and manufacture machines. Plans call for the establishment of a plant and operations in the early future. Mr. Hanson, recently resigned as vice-president and works manager of the Colt's Patent Firearms Mfg. Co. and previously similarly connected with the Pratt & Whitney Co., is president of the new company; Mr. Whitney, president Whitney Mfg. Co., is treasurer; Mr. Young, formerly superintendent of the Colt plant at Meriden in charge of Browning machine gun production, is secretary and general manager. Temporary offices will be established in the Park Street Building of the Billings & Spencer Co., where engineering offices of the company will be permanently established.

The Dalton Mfg. Corporation, 1915 Park Avenue, New York, manufacturer of lathes and drilling machines, has purchased several acres at Sound Beach, Conn., and has awarded contract to Richard Deeves & Son, 309 Broadway, New York, for the construction of four factory buildings and a power house. Electric individual motor drives for large machines and group drives for the smaller ones will be installed, and it is planned to place the new plant in operation by Jan. 1, 1920.

The American Motor Truck & Tractor Co., 110 West Fortieth Street, New York, has acquired the plant and property of the Portland Mfg. Co., Portland, Conn., with main building, 85 x 350 ft., and will remodel it for the manufacture of motor trucks and tractors. Extensions, it is said, will be erected.

James Smith & Son, 99 Hope Avenue, Worcester, Mass., manufacturers of machinery and tools, have awarded contract to the E. J. Cross Co., 82 Foster Street, for a two-story addition, 60 x 212 ft., to cost about \$38,000. A boiler house will also be constructed.

The Needham Tire Co., Needham, Mass., manufacturer of automobile tires, etc., has arranged for a stock issue of \$600,000, the proceeds for plant extensions. It is building an addition to increase the output about 300 per cent, and it is proposed to have this building fully equipped with machinery and ready for operation early in September. The extension will include a power station for works operation.

The Ideal Knife Co., Providence, R. I., recently organized, has established a works at 95 Pine Street.

The Simonsville Mfg. Co., Pearl Lake Road, Waterbury, Conn., manufacturer of metal products, is planning for a one and two-story plant, 40 x 165 ft., on Madison Avenue, to cost \$30,000.

The Yale Tire & Rubber Co., New Haven, Conn., will build a power plant, 48 x 48 ft., at its works on Dixwell Avenue, Highwood.

The Martin-Wasp Co., Bennington, Vt., recently organized with a capital of \$100,000, is planning for the immediate establishment of a local plant for the manufacture of a four-cylinder automobile. It is planned to have the plant ready for fall production. Karl H. Martin, Allentown, Pa., is president, and Luther Graves, Bennington, vice-president.

The Springfield Foundry Co., Springfield, Mass., has awarded contract to E. J. Pinney, Springfield, for one-story additions, 100 x 100 ft. and 40 x 50 ft.

The Wuskanut Mills, Farnumsville, Mass., are planning for a new four-story machine shop, 36 x 52 ft., to cost \$20,000.

Buffalo

BUFFALO, July 21.

The Buffalo Weaving & Belting Co., Chandler Street and the New York Central Railroad Belt Line, Buffalo, is building a one-story addition, 42 x 150 ft., to cost \$15,000.

The Donner-Union Coke Co., Buffalo, has commenced construction of a brick and steel machine shop at its new plant at Abby Street and the Lackawanna Railroad.

The Buffalo Forge Co., Broadway and Mortimer Street, Buffalo, will build a steel and brick addition to cost \$14,000.

The Merritt Mfg. Co., Lockport, N. Y., manufacturer of machinery, has had plans drawn for a steel and brick machine shop, 70 x 90 ft., to be erected on Michigan Street at a cost of \$15,000.

The Quayle Garage Co., Main and Rodney streets, Buffalo, is planning for a service works and machine repair plant to cost about \$40,000.

The city officials, Buffalo, including Mayor Buck and Samuel B. Botsford, president the Chamber of Commerce, are negotiating with the Government Ordnance Department, for the resumption of activities at the Elmwood Avenue plant of the Curtiss Aeroplane & Motor Corporation, for the manufacture of aircraft. The plant is now being used as a storehouse; the proposed operation will be as a Government enterprise.

The Stewart Motor Co., 425 East Delavan Avenue, Buffalo, is planning for the occupancy of the plant of the Cyphers Incubator Co., Dewey Avenue, recently acquired. It will be remodeled and new equipment installed at an estimated cost of \$150,000.

The Ball Engine Co., Erie, Pa., will build a one-story addition at Twelfth and Cranberry streets, 125 x 175 ft., for increased output. The company is also said to be planning for further extensions.

The Massey Automobile Co., Ogdensburg, N. Y., will make alterations and extensions in the Continental Building, recently acquired, for the establishment of a plant for the manufacture of steam automobile trucks. The works are estimated to cost about \$50,000. H. A. Massey heads the company.

The additions to the plant of the Buffalo Bolt Co., East Avenue and Oliver Street, Tonawanda, N. Y., will comprise a one-story addition to the rolling mill, 80 x 170 ft., and one-story extension to the tumbling department, 40 x 340 ft. The additions are estimated to cost \$60,000.

Chicago

CHICAGO, July 21.

Some dealers report business as good and better than in June, but in general it is doubtful whether the situation is as good as last month. By some the decline in orders is attributed to the vacation season and by others to labor difficulties, including strikes and a shortage of skilled help. In the aggregate the orders and inquiries that are coming in are still encouraging, although no new lists have made their appearance, and most purchases are for one or two machines. Orders for lathes have been particularly numerous of late, and it is predicted that a number of manufacturers will soon advance their prices. Dealers are experiencing increasing difficulty in securing deliveries, particularly of the higher-priced machines.

Strikes have tied up the plants of a number of local gear manufacturers, including the Foote Brothers Gear & Machine Co., the William Ganschow Co. and the D. O. James Mfg. Co.

The Continental Motors Corporation, Muskegon, Mich., recently placed orders for 5 engine lathes, 4 turret lathes, 3 automatic screw machines and a number of planers, shapers, radial drills and broaching machines. This company is expected to purchase additional equipment, including multiple drilling machines and a pipe machine. The Riverside Foundry, Great Falls, Mont., has purchased a 20-in. x 10-ft. engine lathe, 14-in. x 6-ft. lathe, Heald grinding machine, 32-in. and 14-in. drilling machines, screw press, Marvel saw, chucks, blower and small tools. Other recent purchases include a 20-in. drill press, punch press and surface grinding machine bought by Ashton & Russell, contracting engineers, 130 North Wells Street, Chicago, and a large engine lathe and 62-in. boring mill bought by the American Well Works, Aurora, Ill. The Pioneer Iron Works, Sioux City, Ia., is inquiring for a 24-in. x 12-ft. engine lathe, and the Peru Plow & Wheel Co., Peru, Ill., is in the market for a 24-in. x 10-ft. lathe. The Chicago Board of Education, which recently sent out an inquiry for a grinding machine and a hack saw, is reported to have purchased second-hand tools from the Government.

A dispute of several weeks standing between the contractors and building trades unions of Chicago reached a climax July 18, when the former declared a lockout. Subsequent overtures made by the unions may lead to a settlement.

The Cleveland Metal Products Co., manufacturer of cooking utensils, oil heaters, etc., 728 Frankfort Avenue, Cleveland has purchased a tract 114 x 449 ft., at the southeast corner of Western Avenue and Forty-third Street, Chicago, where a plant will be erected.

William T. Bramitzky, architect, 64 West Randolph Street, Chicago, has received bids on a machine shop to be erected at East Chicago, Ind., for George B. Lambert & Co., at an estimated cost of \$80,000. The project comprises a two-story and basement structure, 52 x 82 ft., and one-story building, 90 x 172 ft., the front portion of which will be two stories.

Contracts have been awarded for a one-story plant, 120 x 240 ft., at Jeffery Boulevard and South Chicago Avenue, Chicago, for the Gill Mfg. Co., manufacturer of automobile parts at an estimated cost of \$100,000.

The Mutual Die Castings Co. has awarded a contract for a one-story plant, 25 x 8 1/2 ft. at 1352 West Fifty-ninth Street, Chicago, to cost \$5000.

The Armstrong Brothers Tool Co. has let contracts for a one and two-story plant, 60 x 152 ft. and 60 x 113 ft., at 207 to 331 North Francisco Avenue, Chicago, at a cost of \$125,000.

The Chicago Baling Press Mfg. Co., manufacturer of electric, belt and hand-power baling presses, has been incorporated with a capital stock of \$35,000. It succeeds the Chicago Baling Press Co., the business of which it has taken over. The company has offices at 305 South La Salle Street, Chicago, and a plant at 4327-29 West Harrison Street. F. G. Manuel is president and manager, and M. C. Tobias is secretary and treasurer.

The Haag Brothers Co., manufacturer of washing machines, is constructing a two-story plant in East Peoria, Ill., to cost \$150,000.

The Racine-Sattley Co., manufacturer of agricultural implements, Springfield, Ill., will soon commence the construction of a gas engine factory building adjacent to its works.

The Forest City Bit & Tool Co., Rockford, Ill., has started the erection of a one-story addition, 36 x 50 ft., adjoining its plant at Kishwaukee Street and Sand Avenue, to be used for machine-shop operations.

The Rockford Milling Machine Co., Rockford, Ill., which recently increased its capital stock, plans a four-story plant

addition, 60 x 250 ft., to increase its output of adding machines to 1500 monthly.

The Belden Mfg. Co., 2300 South Western Avenue, Chicago, has recently let contracts for the erection of a four-story factory building at their new plant at Kilpatrick Avenue and West Congress Street, to be used for expansion of the different magnet wire departments. This will make the third building erected by the company on this tract. Five more buildings are contemplated in the next few years.

The Butler Street Foundry & Iron Works, Chicago, will build a one-story addition, 25 x 125 ft., to cost \$20,000.

The Illinois Pattern & Foundry Co., Geneva, Ill., has been incorporated with a capital stock of \$50,000 by Lawrence C. Traeger, Richard H. Mather and A. M. Odegard.

The Grip Nut Co., McCormick Building, Chicago, manufacturer of bolts, nuts, etc., with works at South Whitley, Ind., has purchased property, 250 x 900 ft., on Fifty-ninth Street, near Western Avenue, for a proposed plant. The initial works, foundations for which will be started at an early date, will comprise a main building, 100 x 750 ft., to cost \$500,000, including machinery. Two electric traveling cranes will be installed. It is planned to have the plant ready in about 90 days.

The Multi-X Motors Co., Chicago, a Delaware corporation, has increased its capital stock from \$1,000,000 to \$3,000,000, at the same time changing its name to the Multi-X Aircraft Motor Co.

The Excel Battery Works, 1502 South Wabash Avenue, Chicago, has been incorporated with a capital stock of \$10,000 by F. A. Liggett, P. A. Thompson and Stephen Keller, to manufacture electric batteries, etc.

The Standard Spring Co., 232 East Ontario Street, Chicago, has been incorporated with a capital stock of \$10,000 by Anton Cherney, George W. Spangle and George H. Kriste.

The Hill Pump Valve Co., 2307 Archer Avenue, Chicago, is taking bids for its proposed one-story plant, 213 x 265 ft., at 4001-21 Belmont Avenue, to cost \$100,000, including equipment.

The Liberty Auto Truck Co., Chicago, has been incorporated in Delaware with capital stock of \$200,000 by Samuel C. Wood and Arthur M. Brody, Chicago, to manufacture motor trucks.

The James Levy Aircraft Co., 2055 Indiana Avenue, Chicago, has been incorporated with a capital stock of \$150,000 by James Levy, Charles E. Gregory and John H. Roser, to manufacture aeroplanes, parts, etc.

The International Harvester Co., Chicago, has filed plans for a two, three and four-story addition to its plant on Eighty-first Street, to cost about \$80,000.

Baltimore

BALTIMORE, July 21.

The National Auto Radiator & Fender Co., 9 East Lanvale Street, Baltimore, has been incorporated with \$25,000 capital stock by George J. and Christopher C. Diering and Karl Steinmann.

For the purpose of manufacturing ventilators the Automatic Ventilator Co., 321 East Twenty-fifth Street, Baltimore, has been incorporated with \$25,000 capital stock by Harry W. Gaddess, Edward W. Lester and Milton Roberts.

David W. Bridges, 325 East Oliver Street, Baltimore, will build a garage, 150 x 400 ft. The contract has been awarded to Gladfelter & Chambers.

In connection with the plans of C. Billups Son & Co., Norfolk, Va., has awarded a contract to E. A. Goehring for a foundry, 250 x 40 ft., to cost \$20,000. R. E. Summers is manager.

The National Screen Co., Suffolk, Va., plans to establish a plant for the manufacture of screen doors and windows.

The Southern Nautical Instrument Supply & Repair Co., Portsmouth, Va., has been incorporated with \$25,000 capital stock. F. R. Watts is president and B. E. Dalton secretary.

The Campostella Machine Works Co., Norfolk, Va., will build a machine shop, 57 x 100 ft.

The Southern Shipyard Corporation, Newport News, Va., has been organized with \$200,000 capital stock. Several shipways are to be constructed and contracts for buildings to be used for machine, pattern and other work have been awarded to the Truscon Steel Co., Youngstown, Ohio. O. A. Bloxom is president and general manager; T. A. Fowler, vice-president, and C. L. Marsilliot, secretary and treasurer.

Charles A. McLean, Citizens Bank Building, Norfolk, Va., wants quotations on lathes with 36-in. x 12 or 14 ft.

The Carolina Steel & Iron Co., Greensboro, N. C., has been organized with \$100,000 capital stock. W. C. Boren is

president, W. B. Truitt vice-president, and J. W. McLennon secretary and treasurer. It plans additions to the plant which it has acquired.

C. W. Hodges, Newbern, N. C., wants prices on radial drills, 24-in. lathes and small steam hammers.

The Birmingham Engineering Co., Atlanta, Ga., wants prices on planers, and threading machines to cut $\frac{1}{2}$ to $1\frac{1}{2}$ -in. bolts.

The Hagerstown Welding & Automobile Works, Hagerstown, Md., recently incorporated with a capital of \$50,000, is planning for a one and two-story works, 40 x 100 ft., and 40 x 50 ft., respectively, to include machine shop, repair department, automobile parts manufacture and welding departments, etc. John J. Kernan, 1232 West Lombard Street, Baltimore, is president.

The Bureau of Yards and Docks, Navy Department, Washington, is preparing plans for two large hangars, with repair shop departments, etc., to cost about \$3,500,000. An appropriation of this amount is provided in the new naval appropriation bill. The structures will be located on the Atlantic seaboard, with site in New Jersey now being considered.

The Reinhard Motor Co., Baltimore, has taken bids for its proposed four-story plant, 40 x 110 ft., at Oak Street and North Avenue.

The Southern Nautical Instrument & Repair Co., Portsmouth, Va., has been incorporated with a capital of \$25,000 by F. R. Watts and B. E. Dalton to manufacture nautical instruments and parts.

The Universal Garage Co., Pennsylvania and Fulton avenues, Baltimore, has completed plans for its proposed one-story service works and repair plant, 98 x 350 ft., to cost about \$56,000 including equipment.

The Alspaugh Light & Power Co., Taylorsville, N. C., is planning for a new hydroelectric power plant about five miles from the city at an estimated cost of \$30,000. T. C. Alspaugh is president.

The United States Brick & Potash Corporation, Roanoke, Va., is planning for the construction of a new lime pulverizing plant. The kilns to be erected in connection with the main works will have a normal capacity of about 200 tons a day.

The Continental Stove Co., Richmond, Va., is planning the construction of a foundry for stove castings.

J. O. White & Sons, Winston-Salem, N. C., are planning for a plant to cost \$30,000 for the manufacture of automobile bodies. It will include metal-working shop, forge shop, wood-working department, etc.

The Southern Foundry & Machine Co., Chattanooga, Tenn., has increased its capital from \$75,000 to \$200,000. It owns a 3-acre site, and will build a new machine shop and foundry.

The A. R. G. Auxiliary Spring Co., Birmingham, Ala., recently incorporated, is planning for a local plant for the manufacture of springs for automobiles and motor trucks. The installation will comprise shearing machines, threading machinery, presses, punches, etc. E. P. Kirkpatrick, 1098 Avenue B, is secretary.

The Bass Foundry & Machine Co., Fort Wayne, Ind., is planning for a new plant near its branch works at Rock Run, Ala., for the manufacture of boilers, engines, railway axles, etc. The new works, with equipment, is estimated to cost \$250,000.

Cleveland

CLEVELAND, July 21.

It is understood that some of the lathe builders who made the largest cut in prices a few months ago are now anxious for an advance, claiming that with the increased costs their prices are too low, and in view of this sentiment members of the trade are expectant of an advance of at least 10 per cent.

The demand for machine tools in small lots continues quite active. The automobile industry, particularly in Detroit, is still buying quite freely to round out equipment, and a good volume of orders continues to come from makers of automobile parts and accessories. Among new inquiries is one from an Ohio accessory manufacturer for 12 machines. The demand appears to be most active for lathes, milling machines and boring mills. The Hydraulic Pressed Steel Co. placed last week orders for 9 large machines aggregating \$40,000. These include a 72-in. boring mill, radial drill, large planer and two 24-in. shapers. The Marion Steam Shovel Co., Marion, Ohio, has issued a list covering its requirements, which include about 20 machines, mostly planers, radial drills and shapers.

The demand for punching and shearing machinery has improved considerably, and a fair volume of business is now coming from shipyards engaged in repair work, and from oil tank shops. A local builder has taken 9 punching and shearing machines from the Bethlehem Steel Co. and the past week booked a number of other orders. The demand for wood-working machinery is very active. Locomotive cranes are in better demand than for some time, and prices are a little firmer.

Outside of strikes that have caused the shutting down of several Cleveland foundries, the foundry situation shows an improvement, and plants are operating at approximately 70 per cent capacity. A shortage of molders has developed in the last few days, due to increased demand, to the fact that many left the city during the slack period, and because some have in the meantime gone into other lines of employment.

The Cleveland-Osborn Co., Cleveland, has commenced the erection of an additional story to its main building, 48 x 145 ft., to be used for increasing the capacity of its molding machine department.

The Apex Electrical Mfg. Co., Cleveland, maker of vacuum cleaners, has acquired the plant of the Cuyahoga Stamping & Machine Co., 152d Street, formerly used in the manufacture of shells, and will move into it about Aug. 1.

The Accurate Machine Co., Cleveland, has commenced operations in a new plant at Colt Avenue and East 134th Street, which will be devoted almost wholly to automobile work. It will discontinue its two plants in the Whitney Power Block and will use its St. Clair Avenue plant exclusively for the manufacture of bushings.

The P. A. Geier Co., Cleveland, manufacturer of vacuum cleaners, etc., has purchased a 5-acre site on 105th Street, where it has commenced the erection of a three-story plant, 60 x 200 ft.

The Cleveland Metal Products Co., Cleveland, has placed contracts for a two-story machine shop, 72 x 266 ft., a foundry addition, 120 x 300 ft., and a two-story assembling plant, 60 x 90 ft.

The Peerless Motor Car Co., Cleveland, has placed contracts for a three-story addition, 40 x 120 ft., and for an assembling room, 45 x 160 ft.

T. F. Rainsford & Co., machinery brokers, Citizens Building, Cleveland, have removed to a salesroom at 408 Frankfort Avenue.

The Austin Co., Cleveland, has taken contracts for warehouses to be erected for the Cleveland Metal Products Co. in Chicago and Kansas City. Both buildings will be 100 x 200 ft., of reinforced concrete.

The Cuyahoga Galvanizing & Mfg. Co., Cleveland, will erect a one-story plant, 60 x 100 ft.

The Ohio Seamless Tube Co., Shelby, Ohio, is planning plant extensions, including a hot-mill building, 100 x 300 ft., and a pickle house, 56 x 140 ft.

F. H. Blake, Wooster, Ohio, will erect a plant for the manufacture of aluminum ware.

The Defiance Machine Works, Defiance, Ohio, has placed contract with the Carrol Engineering Co., Dayton, for tool work in connection with an order recently taken for special machinery for the automobile industry. The Carrol company will open a branch engineering office in Defiance.

The Taplin-Clerkin-Rice Co., Akron, Ohio, has acquired a 42-acre site on the Baltimore & Ohio and Pennsylvania railroads, on which it will erect a foundry estimated to cost \$125,000. Plans contemplate the building later of a machine shop. The company has just increased its capital stock from \$350,000 to \$1,000,000.

The Columbia Chemical Co., Barberton, Ohio, will erect a stone crusher plant at White Cottage, Ohio, at an estimated cost of \$400,000.

The Stiburn Mfg. Co., Elyria, Ohio, will build a plant, 60 x 80 ft., five stories, of brick and steel, for the manufacture of antimony products.

It is announced that the plant to be built by the Tuscora Rubber Co., New Philadelphia, Ohio, will include a main building, 70 x 500 ft., an office building, 60 x 60 ft., and a power house, 40 x 100 ft.

The Sterling Machine & Stamping Co., Wellington, Ohio, has placed contract for a new foundry.

The McCann-Harrison Co., Sloan Building, Cleveland, has completed plans and specifications for the heating and power and complete mechanical equipment for the new spring plant of the Standard Parts Co., at Flint, Mich. The heat-treating furnaces are of the automatic or continuous type, especially designed by Mr. McCann for spring work and are being installed complete by this company.

Cincinnati

CINCINNATI, July 21.

Business received from Spain recently has been exceptionally good. Lathes and shaping machines, as well as portable electric drilling machines have been ordered through New York exporters in very satisfactory quantities. The domestic demand for lathes ranging from 16 in. to 24 in. is very good, but the larger sizes are not wanted.

There is also a good demand for shaping machines. So far, no advances have been made in machine-tool prices, but rumors are afloat that there will be a general marking up within a short time. Attention has repeatedly been called to the higher cost of castings and labor, and tool builders see no alternative except to advance their quotations.

Makers of metal-working machinery have about all the business they can handle at the present time and are now doing some overtime work. Sugar machinery manufacturers are also very busy, mostly with orders from Central and South America. The jobbing foundries are generally operating close to full capacity.

The Reliable Engine Co., Portsmouth, Ohio, manufacturer of internal combustion engines, has tentative plans for removing its plant to Cincinnati.

The Century Machine Co., Cincinnati, maker of bakers' equipment, has acquired the plant of the Incandescent Light and Stove Co. in Oakley. Plans are being prepared for an addition to more than double present capacity.

The Herchede Hall Clock Co., Cincinnati, has taken out a permit for an addition estimated to cost \$40,000.

The Cincinnati Paper Board Co., Cincinnati, has been incorporated with \$250,000 capital stock by H. W. Nichols and others. A paper board plant will be located at Lockland, a suburb.

The Dalton Adding Machine Co., Norwood, Ohio, a Cincinnati suburb, will make an addition, 60 x 125 ft., four stories.

The Southern Ohio Iron Works Co., East Second Street, Cincinnati, has acquired a site on Fredonia Avenue on which it will construct an iron and steel fabricating plant.

The Machinery Clearing House Co., Cincinnati, has been incorporated with \$10,000 capital stock to deal in machine tools and power plant equipment. The officers are: President, Henry P. Thompson; vice-president, Walter C. Taylor; general manager, Walter P. Dolle.

The Wadsworth Watch Co., Dayton, Ky., is having plans prepared for an addition to increase present capacity.

The Hooven, Owens, Rentschler Co., Hamilton, Ohio, has let contract to the Frank Vaughn Construction Co. for two additions, one to be mostly for storage. It is rumored that the company also intends to erect a foundry building.

The Master Tire & Rubber Co., Dayton, Ohio, recently incorporated, will construct a six-story plant at Leo and Shafer streets, North Dayton.

The Cumberland Foundry & Mfg. Co., Nashville, Tenn., is preparing to manufacture ranges. The company is inquiring for the following equipment, either new or second-hand in good order: Power press, roll forming machine, polishing machine for tops, No. 4 breaker, small plating outfit, set squaring shears, deep throat punch press. J. A. Cooper is general manager.

The John C. Turner Co., Dayton, Ohio, manufacturer of toys, has increased its capital stock from \$100,000 to \$300,000 and has plans under way for a factory estimated to cost \$100,000.

The Dayton Standard Scale Co., Dayton, Ohio, has been incorporated with \$80,000 capital stock by James E. Barnes and others. Nothing has been given out as to its plans.

The Dayton Steel Co., Dayton, Ohio, recently incorporated by J. A. Berger and others, has purchased the plant of the Dayton Structural Steel Co., on Howell Avenue.

The Wickham Piano Plate Co., Springfield, Ohio, has let contract for an addition, 50 x 170 ft., one story, of reinforced concrete.

The branch plant of the Timken Roller Bearing Co., Columbus, Ohio, will be located at Cleveland and Fifth avenues. Work will be commenced at an early date.

The Nickel Plate Foundry Co., Collinwood, Ohio, has started work on a brick foundry addition, 94 x 160 ft.

The Miami Trailer Co., Troy, Ohio, is inquiring for a 24-in. second-hand shaping machine.

A factory for the O'Neill Machine Co., Toledo, Ohio, manufacturer of glass-working machinery, will be erected shortly at a cost of \$100,000. The company has purchased three acres, formerly part of the Ohio Electric Car Co. property.

The Troy Carriage Sunshade Co., Troy, Ohio, maker of

automobile tops and windshields, will add a one-story addition 50 x 85 ft.

The Fostoria Tool & Machine Co., Fostoria, Ohio, has been organized and will fit up a machine shop to employ 250 to 300 men.

Pittsburgh

PITTSBURGH, July 21.

Conditions are rather quiet as regards new buying. No large lists are out. Machinery dealers believe, however, that while new inquiry is quiet, a large amount of new business is in sight and some of it is expected to come out in the near future. The Weirton Steel Co., which is building a new open-hearth steel plant at Weirton, W. Va., which has been the largest buyer of machine tools in this market for some time, last week placed a contract with the Westinghouse Electric & Mfg. Co. for several sets of mill motors, and with the General Electric Co. a contract for an electric power plant, switch boards, turbine engines and generator sets. Bids went in some time ago on the cranes for the new Stark, Ohio, car repair plant of the Pennsylvania Lines West, and contracts are expected to be placed in a short time. There are eight or ten cranes wanted for this plant, ranging from 10 to 200 tons.

The Pittsburgh Model Engine Co., owned by the Standard Steel Car Co., will build a large addition to its plant at Homewood, Pittsburgh, at an estimated cost of \$200,000. Considerable new equipment will be needed.

The Truscon Steel Co., Youngstown, Ohio, has just completed a large foundry and machine shop, also a blacksmith shop, these being contained in a steel building 80 x 500 ft., with concrete floor and foundations. The steel for the new building was fabricated by the company in its own shops, and was erected on the foundations as fast as the latter were ready. The building is equipped with steel sash and has been built with a view of affording maximum light and ventilation.

The Russell Machine Co., Pittsburgh, has been chartered with a capital stock of \$100,000 by Charles J. Lang, Wilkinsburg, Pa., Edward J. Land and others. It is understood the company will conduct a general machinery selling business in the Pittsburgh district.

The Homestead Valve Co., Homestead, Pa., has placed a contract with the Austin Co., Cleveland, for the erection of a new foundry, 27 x 40 ft., at an estimated cost of \$10,000. Work is to be started at once.

The Damascus Bronze Co., N. S., Pittsburgh, is taking bids for the erection of a three-story building, 66 x 75 ft.

The Rickert-Shaffer Co., Erie Pa., manufacturers of machinery and tools, is contemplating the erection of a two-story addition, 33 x 150 ft. The company will be in the market for considerable equipment.

The Wolverine Supply & Mfg. Co., N. S., Pittsburgh, manufacturers of automatic toys, has increased its capital stock from \$15,000 to \$100,000.

The Frick-Reid Supply Co., Pittsburgh, has filed notice of an increase in its capital stock to \$1,500,000.

The Morris & Bailey Steel Co., Clairton, Pa., has awarded contract to the John Eichleay, Jr. Co., Twentieth and South Wharton streets, Pittsburgh, for a one-story addition, 130 x 250 ft., to cost \$75,000, including equipment.

The Basic Mineral Co., 834 Columbus Avenue, Pittsburgh, manufacturer of fluxes for metal melting, etc., will build a two-story addition, 75 x 75 ft., to cost \$25,000.

The Bluestone Auto Accessory Mfg. Co., Princeton, W. Va., has been incorporated with capital of \$20,000 by L. R. Taylor and associates, to manufacture automobile parts, etc.

Fire, July 15, destroyed the electric power plant of the Wellsburg Light & Power Co., Wellsburg, W. Va., with loss estimated at \$100,000.

The Vitrolite Co., 1133 West Washington Street, Chicago, manufacturer of composition products, has had plans prepared for a one-story and basement addition, 300 x 400 ft., to its plant at Parkersburg, W. Va. George R. Meyercord is president.

The Hudson Coal Co., Prunty Building, Clarksburg, W. Va., recently organized, is planning for a 2500-ton coal tippie at its properties. C. S. Elliott is president.

The Standard Metals Corporation, Pittsburgh, has been incorporated in Delaware with a capital stock of \$3,000,000 by Frank C. Park, W. L. Lenley and W. K. Elder, to manufacture iron and metal specialties.

The Valveless Steam Motor Co., Pittsburgh, has been incorporated in Delaware, with capital stock of \$2,000,000 by George J. Young, George E. Hunkle and H. J. Ruettgers, to manufacture special motors.

The Keystone Die & Mfg. Co., Pittsburgh, has been incorporated with a capital stock of \$30,000 by Joseph V. Boyle, 2555 West Carson Street; Joseph J. Szepe, and John M. Hickly, 1705 Laurel Street, to manufacture tools, dies, etc.

The Howard Stove Co., Beaver Falls, Pa., and the Zenith Stove & Heater Co., Pittsburgh, have merged under the name of the Howard Stove Co. The main offices of the new company will be at Beaver Falls. The Howard company was capitalized at \$50,000 and the Zenith company at \$18,000, while the capital of the new concern will be \$68,000. William Walker, Shields, Pa., is president; Herman G. Scott, Sewickley, Pa., secretary, and John W. DuPuy, Beaver Falls, treasurer.

The G. L. Sullivan Co., Pittsburgh, has been incorporated by Albert St. Peter, 520 Berwin Avenue, Pittsburgh; C. H. Boston, 1113 Trenton Avenue, Wilkensburg, and W. A. Madigan, 441 Hays Avenue, Mount Oliver, with a capital stock of \$25,000, to manufacture mechanical parts of automobile trucks, wheels, hoists and truck bodies.

The Pittsburgh Truck Mfg. Co., Pittsburgh, capitalized at \$100,000, has been incorporated to manufacture auto vehicles, supplies in addition to doing repair work. F. P. Lawdes, James G. Murray and M. C. Lawdes are the incorporators.

The Remmen Gas Engine Co., Pittsburgh, has filed notice of an increase in capital stock from \$5,000 to \$50,000. Ralph W. Gibbs is secretary.

The Guyan Machine Shops, Logan, W. Va., is in the market for a conveyor for conveying coal up a 30-deg. slope, 125 ft. in length, with a capacity of 300 tons per 8 hr., for an a. c. motor, 100-hp., 3-phase, 60-cycle, 2300-volts, 800 r.p.m.; three gasoline-driven motor cars about 44-in. gage for hauling lumber, to handle about 5000 lb. per load; a lathe or boring mill for turning 36-in. locomotive tires, and a 15-hp. or 20-hp., 250-volt motor for electric hoists.

The Virginia Rubber Co., 1110 Union Trust Building, Charleston, W. Va., will establish a plant for the manufacture of automobile tires and wants prices on machinery. A. A. Lilly is president.

Milwaukee

MILWAUKEE, July 21.

Machine-tool makers are keeping their shops busy at a satisfactory capacity and have sufficient business to maintain these schedules for 30 to 60 days. Milling machine manufacturers continue to fare somewhat better than builders of other classes of tools in respect to new business, and in some cases maximum capacity is required to fill orders. As a rule buyers desire prompt delivery, the tools being needed to piece out shop equipment or provide immediate increase of production. This forms the bulk of new business, in which large lots figure rarely and infrequently. While the automotive industries have furnished the major part of new orders, inquiries and actual orders are beginning to appear from other sources, but in general the Central West is by far the most active buyer.

The Wisconsin Coal & Dock Co., First National Bank Building, Milwaukee, has awarded contract to the Codrington Engineering Co., North Milwaukee, for a coal bridge with a capacity of 275-300 tons per hr. at its Canal Street dock. It will have a 167-ft. span, with a 60-ft. boom, hinged to a 40-ft. overhang, accommodating a 40-ft. pile. The bridge will be of the man-trolley type, with a 3-ton bucket. The structural steel, amounting to about 120 tons, will be fabricated and erected by the Lakeside Bridge & Steel Co., North Milwaukee.

The Helgeson Foundry Co., Green Bay, Wis., has been incorporated with a capital stock of \$100,000 and will take over and develop the gray-iron foundry business of Anthony Helgeson to embrace the manufacture of steel and semi-steel. Buildings on Main Street will be remodeled and enlarged to accommodate the cupola and other equipment of the present Helgeson foundry on Roosevelt Street. The contract for steel-making equipment and other requirements has been let to the Whiting Foundry Equipment Co., Chicago, and it is expected that the new plant will be ready for operation Oct. 1. Officers of the new corporation are: President, Anthony Helgeson; vice-president, A. W. Gregg; secretary and treasurer, A. L. Canard. Mr. Gregg formerly was chief metallurgist and foundry superintendent of the Bucyrus Co., South Milwaukee, Wis., and also superintendent and works manager of the McCord Co., West Pullman, Ill. The new plant will employ an initial force of 80 men.

The Great Lakes Malleable Co., Milwaukee, recently incorporated with a capital stock of \$100,000, will manufacture agricultural and general industrial castings in the former plant of the Maynard Steel Foundry Co., 710-716

Reed Street, in which new equipment is being installed. The Maynard company is now located in its new electric steel casting shop at Kilbourn Road and Oklahoma Avenue. The Great Lakes company is organized by W. T. Hersher, who has resigned as superintendent of the malleable foundry of the Chain Belt Co., Milwaukee, to become president and general manager of the new interest. He formerly was superintendent Bridgeport Malleable Iron Works of the Eastern Malleable Iron Co., Bridgeport, Conn. With him are associated F. J. Veal, president Stoughton (Wis.) Wagon Co., and Ray F. Ethier, formerly assistant sales manager Chain Belt Co.

The Milwaukee Stamping Co., manufacturer of hardware specialties, has awarded contracts for a three-story brick, concrete and steel addition, 80 x 140 ft., at Sixty-fourth and Pullen avenues, West Allis. Additional equipment is being purchased. A. J. Petrie is president and general manager.

The Surf Mfg. Co., Milwaukee, has been organized with a capital stock of \$100,000 to manufacture motor-driven all-metal domestic washing machines. The incorporators are Alois W. Krahn, Oscar F. Fischebeck and T. J. Hannan, attorney. For the present production will be carried on in the plant of the Krahn Mfg. Co., 588-592 Clinton Street.

The Wisconsin Screw Co., Racine, Wis., has been formed by Stanley and Paul Kaleske and Stanley Kalicki to manufacture screw machine products and automotive equipment. The capital stock amounts to \$25,000.

The F. Blocki Mfg. Co., Sheboygan, Wis., manufacturer of agricultural tools and machinery, will award contracts about Aug. 1 for a one-story brick and concrete plant, 118 x 150 ft., estimated to cost \$75,000 with equipment. W. C. Weeks is the architect. The original plant was sold some time ago to other interests. Frank Blocki is president.

John M. Nash, 842 Thirtieth Street, Milwaukee, manufacturer of special machinery and wood-working tools, has engaged Leenhouts & Guthrie, architects, 424 Jefferson Street, to design a one and two-story factory addition, 38 x 125 ft., bids to be taken about Aug. 1.

The Wisconsin Stove & Range Co., Racine, Wis., has been incorporated with a capital stock of \$10,000 to manufacture heating equipment. The incorporators include Horace R. Simms, president and general manager Simms Foundry Co.; R. L. Williams and John B. Simmons.

The Fulton Co., 1910 St. Paul Avenue, Milwaukee, manufacturer of automobile accessories, will build a new plant and office building in West Allis, of brick and steel, 60 x 160 ft., part two stories, and will require new machinery and equipment. Martin Tullgren & Sons, 425 East Water Street, architects, will take bids at once.

The Triumph Stove & Heater Co., Milwaukee, has been incorporated with a capital stock of \$120,000 to manufacture stoves, furnaces, sheet-metal products, etc. Members of the firm of Schmitz, Wild & Gross, attorneys, First National Bank Building, appear as incorporators. They are not ready to divulge details or the names of interests which they represent.

The National Drop Head Projector Co., Fond du Lac, Wis., has changed its corporate style to the Drop Head Projector Co. and increased its authorized capital stock from \$75,000 to \$125,000. The company is beginning the production of its patented portable motion-picture projecting machine and is purchasing material for 5000 machines. Charles L. Fitz is general superintendent.

Charles M. Stevenson, Chicago, inventor and patentee of barn equipment and hardware, is organizing a \$50,000 corporation at Barton, Wis., which has plans for a one-story factory, 80 x 128 ft., to be built at once. J. M. Felenz, Barton, is secretary.

The Board of Education, Stoughton, Wis., has engaged J. R. & E. J. Law, architects, Madison, Wis., to prepare plans for a one-story central heating plant, 65 x 132 ft., estimated to cost \$50,000. L. C. Currier is secretary.

The Racine Mfg. Co., Racine, Wis., manufacturer of automobile bodies, has awarded contract to Nelson & Co., Racine, for a two-story addition, 45 x 120 ft. Some new metal and wood-working machinery will be installed. Raymond F. Wiens is secretary and treasurer.

The Hydro-Hoist Co., Milwaukee, manufacturer of hydraulic jacks for motor-truck dump bodies, has moved its plant and headquarters to Twenty-sixth and Montana avenues, adjacent to the plant of the Heil Co., manufacturer of steel dump bodies, pneumatic pressure tanks, and other electric-welded products. The Heil Co. has been made general selling agent of the Hydro-Hoist products. Julius P. Heil is vice-president and general manager.

The Kangaroo Co., Chicago, manufacturer of electric

and other mechanical toys and novelties, will move its plant and offices to Ripon, Wis., where local capital has taken a \$75,000 interest. The Ripon Commercial Club is in charge of negotiations.

The General Welding & Mfg. Co., 347 Florida Street, Milwaukee, has increased its capital stock from \$10,000 to \$20,000 to accommodate increased business and finance enlargement of facilities.

The Plymouth Phonograph Co., Plymouth, Wis., organized with \$400,000 capital to take over and develop the plant of the C. F. Kade Showcase & Fixture Co., has perfected its organization by the election of these officers: President, William H. Thommen, Port Washington, Wis., vice-president, J. B. Thiery, Milwaukee; secretary and treasurer, Frank McIntyre, Plymouth. About \$75,000 will be invested in an extension and new equipment.

The Everite Belt Co., Milwaukee, has been incorporated with a capital stock of \$200,000 to manufacture belting, etc. The organizers are represented by Carl B. Rix and Herbert E. Toelle, attorneys, 120 Wisconsin Street.

Indianapolis

INDIANAPOLIS, July 21.

The Bull Tractor Madison Motors Corporation, Anderson, Ind., has increased its capital stock from \$1,000,000 to \$3,000,000.

The Nicholson File Co., Anderson, Ind., has increased its force of workmen from 800 to 950, and its output from 6500 dozens to 10,000 dozens of files daily.

New machinery will be installed by the Blount Plow Works, Vincennes, Ind., formerly, the Hartman Mfg. Co.

The Simplex Short Turn Trailer Co., recently organized with \$100,000 capital stock, will establish its factory at Lagro, Ind.

The Hohmann Sewing Machine Co., Peru, Ind., recently organized with \$600,000 capital stock, has leased a factory which it will equip. Richard K. Hohmann is president, Ernest Theobald vice-president, and C. L. Buckley, secretary and treasurer.

An arrangement between the Columbus Foundry Co., Columbus, Ind., and the Universal Supply Co., Indianapolis, is expected to result in the enlargement of the former's line of products and an increase in its working force.

The Indiana Silo Co., Anderson, Ind., and the Star Tractor Co., Findlay, Ohio, will be consolidated with \$1,500,000 capital stock. The factory at Findlay will be abandoned and a new one erected at Anderson, where 5000 tractors a year are to be built. The directors of the Silo company are W. E. Swain, E. M. Wilson, C. C. McGuire, Austin Retherford and E. C. Toner. The new corporation will be known as the Indiana Tractor & Silo Co. Paul H. White, constructing engineer, and Edgar H. Evans, head of the Acme-Evans Co., both of Indianapolis, are interested in the new company. The Silo company already has factories in Anderson, Des Moines, Kansas City and Fort Worth.

The Inland Motor Truck Co., Evansville, Ind., has been organized with \$10,000 capital stock and will build a factory to manufacture auto trucks. A. R. Schultz will be general manager; Henry J. Graf, Louis J. Graf, William Lightner and Elmer Q. Lockyear, directors.

The Safety First Tall-Light Co., Indianapolis, has been incorporated with \$10,000 capital stock to manufacture electrical and other lighting devices. The directors are George W. Nicholson, Arthur J. Kelly, Nelson L. Arbuckle, A. C. Dodds and George V. Harpin.

The Atkins Safety Automatic Gate Co., South Bend, Ind., has been incorporated with \$100,000 capital stock by Joseph B. Atkins, Edward W. Sykes and Harry A. Engman to manufacture gates.

The Hole Elevator Co., 214 South Pennsylvania Street, Indianapolis, is planning for a local works to cost about \$15,000. The W. P. Jungclaus Co., Massachusetts Avenue, is the architect.

The Railway Motor Car Co. of America, Hammond, Ind., is having plans prepared for a one and two-story addition, 100 x 150 ft., with power plant, 40 x 78 ft.

The G. I. Sellers & Son Co., Elwood, Ind., manufacturer of kitchen cabinets, has arranged for the erection of a four-story addition, 65 x 165 ft., to cost \$50,000.

The Dairy Cream Separator Co., Lebanon, Ind., has been incorporated with a capital stock of \$420,000 to manufacture cream separators. The directors include James K. Risk, Cecil G. Fowler and Paul Honan.

The Teeter-Hartley Motor Co., Hagerstown, Ind., will build a plant at Connersville, Ind.

The Automatic Dump Car Co., South Bend, Ind., has

taken over that part of its plant formerly occupied by the Indiana Cord Tire Co.

The J. G. Cherry Co., machinist and founder, Cedar Rapids, Iowa, has asked for bids on a three-story and basement addition, 140 x 180 ft., with a floor space of 100,000 sq. ft.

St. Louis

ST. LOUIS, Mo., July 21.

A power plant to cost about \$120,000 will be equipped at Algiers, La., by the Navy Department under the direction of its engineers stationed there.

The St. Louis Mfg. Co., 5401 Bulwer Avenue, St. Louis, will equip a power house 96 x 150 ft., at a cost of \$125,000.

Christian Brothers College, St. Louis, under the supervision of the Kellermann Co., will equip a power plant and service station at a cost of \$60,000.

The State Board of Affairs of Oklahoma will equip a power house at Oklahoma City, Okla., under the supervision of N. T. Hardin, architect and engineer, Muskogee, Okla.

The Public Service Corporation, Tulsa, Okla., will equip an electric generating station at a cost of \$750,000. Power-plant equipment to cost \$300,000 and turbine, generator and auxiliary apparatus to cost \$205,000 are included. F. W. Insull, Chicago, is president.

The New Motor Fuels Co., St. Joseph, Mo., capital stock \$5,000,000, will equip for the manufacture of motor fuel. S. M. Herber, 319 West Missouri Avenue, is manager.

The Blackweel Mfg. Co., Camden, Ark., has increased its capital by \$100,000 for the purpose of increasing its manufacturing capacity.

The Service Caster & Truck Co., Kansas City, Mo., John L. Chestnut, manager, 2533 Southwest Boulevard, will equip a plant for the manufacture of automatic lifts, casters, etc.

W. O. Johnson & Co., Springfield, Mo., will equip a shop, 40 x 100 ft., requiring among other equipment two travelling cranes, to cost about \$15,000.

The Ely & Walker Dry Goods Co., St. Louis, will equip a trunk factory at a cost of about \$100,000.

The Power Farm Tractor Co., Shreveport, La., will equip a plant for the manufacture and assembly of farm tractors. J. M. Ponder is manager.

The Premier Tire & Rubber Co., Kansas City, capital \$300,000, Griyer Joyce president, will equip a plant for the manufacture of tires, tubes, etc.

Lillard & Suttle, Lester, Ark., are in the market for brick- and tile-making machinery.

The Mineral Refining & Chemical Corporation, Iron Mountain Railroad and River Des Peres, St. Louis, requires boiler equipment of 500 hp., chemical and mineral drying apparatus and conveying equipment for an addition to be built at a cost of about \$500,000. A. Alayo is general manager.

Bids will be asked soon for constructing and equipping three additional buildings for the General Motors Corporation at St. Louis. Two assembling plants, one for the Buick division and the other for the Chevrolet division, will be built at a cost of \$800,000 each, and an administration building will be built between the two assembling plants. Permits for the buildings, just issued at St. Louis, show that they will be three stories of concrete, 300 x 702 ft. each. W. H. K. Kilpatrick, works engineer at the Buick plant at Flint, Mich., will supervise construction.

The Union Motor Car Co., Memphis, Tenn., is having plans prepared for a three-story and basement repair works, 120 x 225 ft., to cost about \$200,000, including equipment.

The Louisiana Farm Machinery Co., Shreveport, La., has increased its capital stock to \$40,000.

The Shreveport Brick & Tile Co., Shreveport, La., is planning an addition to increase output by 25,000 bricks per day, the extension to cost about \$50,000.

The Memphis Weather Strip & Screen Co., Memphis, Tenn., has been incorporated with a capital stock of \$10,000 by J. M. Walker and associates to manufacture metal weather strips, wire screens, etc.

Detroit

DETROIT, July 21.

Dealers here in machine tools and supplies report the demand heavy in both lines and expect it to continue to increase. It is generally predicted that by autumn dealers will be unable to fill the large volume of orders that will come in. With trade booming under present conditions, automobile manufacturers pressing for raw materials and labor with which to meet the strong demand for motor cars and trucks that is forecast this year, a lessening of the

stringency in these two directions is expected to have its effect on the machine-tool and supply trade. Another factor is the large plant extension program, which has brought or will bring nearly every manufacturer in the state into the market for machinery before winter. In regard to labor, while the shortage continues in Detroit, various manufacturing centers out in the state report that situation as very favorable, although the supply is never quite up to the demand.

A new automobile carburetor manufacturer will start operations about Aug. 1 in Wyandotte, Mich., in the plant of the defunct Detroit-Wyandotte Motor Co. The enterprise is headed by David and Thomas O. Buick, originators of the Buick Motor Co., Flint, Mich.

The Novo Engine Co. and the New Way Engine Co., Lansing, Mich., report large gains in foreign trade. The Lansing Co., which did not cater to export business before the war, has now entered the field.

Extensive improvements in the way of added equipment are planned for the New Egyptian Portland Cement Co., Fenton, Mich., which will soon resume operations, the plant having been purchased from the Security Trust Co., Detroit, receivers in bankruptcy, by a Detroit syndicate headed by John Gillespie, former police commissioner.

The Welch Mfg. Co., Grand Rapids, Mich., has filed a notice of increase in capitalization from \$200,000 to \$300,000.

The Sigler Player Action Co., Grand Rapids, Mich., organized to manufacture musical instruments, has filed articles of association. The company is capitalized at \$200,000.

The reorganized Leittel Iron Works, Grand Rapids, Mich., has filed articles of association showing a capitalization of \$250,000.

Removal of the American Pozzolano Co., manufacturer of cement, from Fort Wayne, Ind., to Lansing, Mich., is probable, according to attorneys for the company. It will extend its facilities if enough of the raw materials for manufacture can be found in the vicinity of Lansing.

Work on the differential gear and hardening shop of the General Motors Corporation, Holbrook and St. Aubin avenues, Detroit, is progressing rapidly, and the work is expected to be done by early September.

Production of a new 3½-ton truck with four-wheel drive, will be started shortly by the Jackson Automobile Co., Jackson, Mich., whose plant has been idle since the armistice.

The Rochester Metal Works, a new firm, has secured factory space at Rochester, Mich., and has commenced the manufacture of automobile accessories.

Texas

AUSTIN, TEX., July 19.

The Mineola Compress Co., Mineola, will build a cotton compress to cost about \$50,000.

The Houston Lighting & Power Co., Houston, will install additional generators and equipment in its electric power station, etc., to cost about \$500,000. S. R. Bertron, Jr., is general manager.

The Pierce Oil Corporation, Fort Worth, will increase its capital stock from \$33,000,000 to \$68,000,000, part to be used for the construction of refining plants and pipe lines.

The San Antonio Public Service Co., San Antonio, has adopted plans for installing a new steam turbine of 13,000 hp. at a cost of \$275,000.

Plans are being made for the sewage disposal plant which the city of Fort Worth is to construct at a cost of about \$728,000. Bonds have been issued.

Upon application of the Merchants Union Trust Co., Philadelphia, the Corpus Christi Railway & Light Co. has been placed in the hands of C. U. Culberson, receiver. It owns the street railway system and electric light and power plant in Corpus Christi. Improvements will be made as soon as the sanction of the court is obtained.

The Dallas Power & Light Co., Dallas, Tex., has arranged for a bond issue of \$4,500,000, the proceeds to be partly used for extensions and betterments.

The city council, Mexia, Tex., is planning for the establishment of a municipal electric light and power plant to cost about \$100,000.

The Simplex Ice Machine Co., Fort Worth, Tex., has been incorporated with a capital stock of \$20,000 by Harrison E. Moore and associates to manufacture ice machinery.

The American Machinery & Supply Co., Dallas, Tex., has been organized by Henry H. Horr and George H. Ford to manufacture machinery and mill products.

The Reed Hollow Bit Co., Houston, Tex., recently incorporated with a capital stock of \$250,000, will manufacture metal bits. C. E. Reed is president.

California

SAN FRANCISCO, July 15.

Opinion in the trade regarding the present and future business in machinery shows decided differences. There is a general agreement that the territory surrounding San Francisco is perhaps the duller place on the Coast, but some of the machinery houses find that business in other sections of the State is really good when allowance is made for the unsettled condition of labor and business. These houses report a continued inquiry for machine tools and especially for general supplies used in machine shops, and they state that a number of these inquiries result in sales. An important factor in the machinery market is the announcement by the Emergency Fleet Corporation of its intended disposal of surplus and salvage property at public sale. These consist of manufacturing plants, shipyards, etc., including the Liberty Shipyard at Alameda. It is reported that the Bethlehem Shipbuilding Corporation will bid in the latter.

The Golden West Motors Co., Sacramento, has arranged its financial affairs and is now putting in a considerable quantity of new machinery.

Local dealers have received notices of advances in prices of several makes of machines and are looking for a general advance in prices.

The Union Gas Engine Co., Oakland, is figuring on adding machinery. It reports orders on hand sufficient to keep the plant running 24 hr. a day at present capacity for the next year and a half. It is pushing its airplane engine department to supply engines to the Navy for use in dirigibles.

Efforts are being made to induce the Goodyear Rubber Co., Akron, which is planning to establish an automobile tire plant on the Coast, to build it at San Francisco. It is said that the report that Los Angeles had already been decided upon was premature.

The Enterprise Foundry, San Francisco, is building a machine shop at its plant and intends to move the machinery from its South plant to the Nineteenth Street plant. The shop will be 80 x 200 ft. Some new machinery is to be installed.

J. Addison and T. Marilli have bought the Fergodo machine shop at 3549 Seventeenth Street, San Francisco, and will continue the business.

J. J. Ferlin, Modesto, has purchased an interest in the Modesto Machine Works, and will add his own machinery to the plant. Alterations are being made and some new machinery will be installed.

The American Motor Repair Co., San Francisco, has secured a building permit to erect a two-story concrete repair shop at Gough and Post streets at an estimated cost of \$40,000.

The Martell & Monhof Co., Los Angeles, has been incorporated with a capital of \$75,000 by Andrew K. Martell, Emil Monhof and Frank Westerfield, 211 Temple Street, to manufacture concrete pipe-making machinery.

The State Railroad Commission, California, has ordered the Imperial Valley Gas Co., Brawley, Cal., to install new boiler equipment, blowing and other mechanical apparatus.

The Bedell Engineering Co., Los Angeles, has been incorporated with a capital of \$50,000 by Louis R. Bedell, 116 South Dillon Street and Andrew M. Strong, Merchants National Bank Building, to manufacture ice-making and refrigerating machinery.

The Harbor Machine Works, Fish Harbor, East San Pedro, Los Angeles, has filed notice of organization to manufacture machinery, parts, etc. E. P. Blair is president.

The Western Metal Supply Co., Seventh Street, San Diego, Cal., manufacturer of metal products, will build a one-story brick addition, 100 x 200 ft., to cost \$18,000.

C. E. Seymour, Los Angeles, has awarded contract to the Darrell-Condley Co., Marsh-Strong Building, for a one-story machine shop on Figueroa Street, near Twelfth Street, to cost \$10,000.

Contracts are being let by the Keystone Iron Works, 973 North Main Street, Los Angeles, for its proposed plant on Santa Fe Avenue, near Thirty-seventh Street. Plans for the foundry, 100 x 438 ft., are now being revised. This structure will comprise a steel foundry, gray-iron foundry, pattern shop, core and cleaning departments. The installation in addition to regular foundry equipment, will include furnaces and three electric traveling cranes. A machine shop will also be established. Later estimates of cost of the plant have increased from \$125,000 previously announced, to about \$200,000. Albert C. Martin, 430 Higgins Building, is the architect.

The Perkins Welding Works, 217 West Twelfth Street.

Los Angeles, has filed notice of organization to operate a general repair works, etc. R. B. Perkins, 228 South Mar-engo Avenue, Alhambra, heads the company.

The Electro Thermal Control Corporation, Los Angeles, has been incorporated with a capital stock of \$100,000 by Frank W. and E. B. Foster and R. R. Whitcomb, Artesia, to manufacture equipment for heat regulation.

The American Engine & Airplane Co., 2869 West Pico Street, Los Angeles, has filed notice of organization to manufacture aircraft, parts, motors, etc. R. M. Burdick and David R. Davis, 1855 North Kingsley Drive, head the company.

The Pacific Northwest

SEATTLE, July 15.

Industrial conditions in the Northwest are exceptionally good. The labor situation is showing steady improvement, with practically all positions filled. In the eastern section of Washington there is a steady demand for workers in harvest fields. Returning soldiers are being rapidly absorbed in various industries.

Persistent rumors are being received here that an understanding is to be reached between representatives of the Pacific shipyards and the Emergency Fleet Corporation which will put several steel shipbuilding yards on a substantial construction basis. Some definite assurance for the future of shipbuilding locally will act strongly to put the industrial situation in the Northwest in the most prosperous condition that it has been for some years.

The Emergency Fleet Corporation will sell approximately \$20,000,000 worth of shipbuilding materials and equipment in the State of Washington, through an office to be established in Seattle. The materials and equipment were purchased by the Fleet Corporation for handling contracts that later were canceled. C. O. Yokum, Pacific Coast manager of the division of supply and sales, will have charge of the organization in Seattle, with R. D. Caney manager at Seattle. Three sub-offices will be established at Seattle, Portland, and San Francisco.

The South Willamette Planing Mill Co.'s plant at Eugene, Ore., was destroyed by fire recently, with loss of \$25,000. Fire started from a hot box. Plant will be rebuilt, it is reported.

The Hedlund Box & Shingle Co., Spokane, Wash., plans the addition of a planing mill to cost about \$20,000. It is to handle two carloads of lumber daily.

The Northwestern Electric Co., Portland, plans the expenditure of more than \$100,000 in extensions and improvements to its steam and electric systems. The company's new electric generating plant has capacity of 10,000 kw. G. C. Pierce is vice-president and general manager.

The manufacturing equipment of the Thomas Engineering Works, Portland, has been taken over by the American Marine Iron Works, and the Thomas company will devote its efforts to designing, engineering and marketing. C. J. Farmer, Seattle, has taken over the general management of both concerns, although they have not been merged. The American Marine Iron Works will produce all the devices of the Thomas company, including an all-steel gasoline drag saw and power plant, a bending machine, valveless pump, lawn sprinklers and an oil meter. A 15-ton electric traveling crane and molding machines have been installed and other improvements made throughout.

The Crater Lake Box Co., Klamath Falls, Ore., recently incorporated for \$60,000, plans the immediate construction of a box factory.

According to information received by W. H. Crawford, manager of the department of industries of the Chamber of Commerce of Portland, a new meat-packing company is forming in the East, which will locate in Portland. It is reported to be headed by Judge William H. Hawthorne, Spring Valley, Ill., and, it is said, will be incorporated for \$750,000 capital stock.

The Pacific Brass & Steel Works, Portland, has purchased a large site at Seventh and Salmon streets, on which will be erected a plant for the manufacture of brass and crucible steel castings.

The Douglas Brothers Foundry, Aberdeen, Wash., has been sold to a syndicate headed by Hoonan and Knight, owners of the Grays Harbor Machine Works, Hoquiam. It is understood the new owners plan improvements and repairs to the plant.

A start will be made this year on the construction of a drydock at Esquimalt, B. C., by the Dominion Government to cost \$4,000,000. This year about \$500,000 will be expended.

NEW TRADE PUBLICATIONS

Milling Machines.—R. K. Le Blond Machine Tool Co., Cincinnati. Catalog, 113 pages, 9 x 11½ in. Concerned with a line of heavy duty milling machines. Detailed parts of the machines are pictured and described and assembled views with specifications are included. A universal dividing head, circular milling attachments, vertical milling attachments, cutting and slotting attachments, etc., are pictured and described, and instructions for setting up, oiling and adjusting the machines are given.

Wire-Coiling and Wire Nail Machinery.—Sleeper & Hartley, Inc., Worcester, Mass. A series of bulletins in a loose leaf folder describing wire-coiling and wire nail machinery. The various machines are illustrated.

Metal Working Machinery.—Allied Machinery Co. of America, 51 Chambers Street, New York. Booklet. A short history of the machine tool industry with maps showing the centers of machine tool production in the United States and sales offices of the company in foreign countries.

Milling Machines.—Kemp Smith Mfg. Co., Milwaukee, Wis. Catalog, 64 pages, 11 x 9 in. Concerned with a line of plain and universal milling machines, and attachments which include universal dividing heads, vertical spindle milling attachments, circular milling attachments, rack cutting attachments, rack vises, etc. The catalog is profusely illustrated.

Corkboard Insulation.—Armstrong Cork & Insulating Co., Pittsburgh. Folder. Explains the uses of the company's corkboard insulation for cold storage rooms and freezing tanks. Another folder, with the title, "Saving 63 Per Cent of the Drinking Water Expense," is concerned with fountain drinking water systems.

Air Washing and Cooling Equipment.—Spray Engineering Co., 93 Federal Street, Boston. Bulletin 257. Illustrates and describes air washing and cooling equipment especially applicable for steam turbine generators. Details of construction are given.

Thread Miller.—Smalley-General Co., Inc., Bay City, Mich. Pamphlet. Describes the company's No. 24 standard thread miller, a single purpose machine especially adapted to production work and designed for three milling speeds only. The machine is illustrated.

Radiator Traps.—Trane Co., La Crosse, Wis. Catalog. Describes a radiator trap made without the diaphragm. Details of construction are shown.

Tube Scraping Device.—Combustion Engineering Corporation, New York. Bulletin S-1. Concerned with a tube scraping device to be used with horizontal water tube boiler settings to permit cleaning the lower boiler tubes without shutting down the boiler. This device was described in THE IRON AGE issue of May 8, page 1230.

Coal Handling Equipment.—De Pere Mfg. Co., Chicago. Five bulletins devoted to coal conveying equipment. Bulletin No. 1 covers bringing in boiler coal from car and yard; No. 2, easy handling of coal from car to boilers; No. 3, coal delivery from cars to gas producers; No. 4, supplying coal to make gas to melt glass; No. 5, coal distribution and ash disposal. The bulletins are illustrated.

Automobile Hinges and Locks.—English & Mersick Co., New Haven, Conn. Supplement No. 2. A booklet devoted to door hinges, locks, handles and limousine side lamps, for automobiles.

Set Up Appliances for Machine Tools.—Standard Shop Equipment Co., Inc., 802 Real Estate Trust Building, Philadelphia. Folder. Specifications, illustrations and descriptions of packing blocks, double end clamps, single end clamps, step blocks, washers, wedges, nuts and machine table bolts for tool room and machine shop use.

Ovens for Cores and Molds.—Foundry Equipment Co., Cleveland. Catalog, 44 pages, 7 x 10 in. Concerned with a line of ovens for cores and molds, which includes portable rack, rolling drawer, car type and combination ovens. Numerous views of the different types of ovens installed in manufacturing plants are shown.

Rivets, Bolts, Nuts.—Falls Rivet Co., Kent, Ohio. Catalog 19, 110 pages, 5¼ x 7¼ in. Specifications of a line of rivets, bolts and nuts. The various types are illustrated and numerous tables of weights, form and dimensions of thread, millimeter equivalents of inches, decimal equivalents of millimeters and fractions of millimeters, different standards for wire gages, etc., are included.

Gears.—Boston Gear Works, Norfolk Downs, Mass. Catalog F-9. Specifications of a line of standardized stock gears made in 1200 sizes, also sprockets and chains, universal joints and ball bearings. The articles are illustrated.

Current Metal Prices

On Small Lots, from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

Iron and Soft Steel Bars and Shapes

	Per lb.
Bars:	
Refined iron, base price	3.37c
Burden's H. B. & S. bar iron, base price	6.10c
Burden's best bar iron, base price	6.30c
Swedish bars, base price	20.00c
Soft Steel:	
¾ to 1 ½ in., round and square	3.37c
1 to 6 in. x ¾ to 1 in.	3.37c
1 to 6 in. x ¼ and 5/16	3.47c
Rods—¾ and 1 1/16	3.42c
Bands—1 ½ to 6 x 3/16 to No. 8	4.07c
Shapes:	
Beams and channels—3 to 15 in.	3.47c
Angles:	
3 in. x ¼ in. and larger	3.47c
3 in. x 3/16 and ½ in.	3.72c
1 ½ to 2 ½ in. x ½ in.	3.52c
1 ½ x 2 ¾ in. x 3/16 in. and thicker	3.47c
1 to 1 ¼ in. x 3/16 in.	3.52c
1 to 1 ¼ in. x ½ in.	3.57c
¾ x ¾ x ½ in.	3.62c
¾ x ½ in.	3.67c
¾ x ½ in.	4.47c
½ x 3/32 in.	5.17c
Tees:	
1 x ½ in.	3.87c
1 ¼ in. x 1 ¼ x 3/16 in.	3.77c
1 ½ to 2 ½ x ¼ in.	3.57c
1 ½ to 2 ½ x 3/16 in.	3.57c
3 in. and larger	3.52c

Merchant Steel

	Per lb.
Tire, 1 ½ x ½ in. and larger	3.37c
Toe calk, ½ x ¾ in. and larger	4.25c
Open-hearth spring steel	6.00c
Standard cast steel, base price	14.00c
Extra cast steel	18.00 to 20.00c
Special cast steel	23.00 to 25.00c

Tank Plates—Steel

	Per lb.
¼ in. and heavier	3.67c

Sheets

Blue Annealed

	Per lb.
No. 8 and 3/16 in.	4.52c
No. 10	4.57c
No. 12	4.62c
No. 14	4.67c
No. 16	4.77c

Box Annealed—Black

	Soft Steel C. R. One Pass, per lb.	Wood's Refined, per lb.
Nos. 18 to 20	5.15 to 5.17c	
Nos. 22 and 24	5.20 to 5.22c	6.55c
No. 26	5.25 to 5.27c	6.60c
No. 28	5.35 to 5.37c	6.75c
No. 30	5.55 to 5.57c	
No. 28, 36 in. wide, 10c higher.		
Wood's Keystone Hammered, 18-24 gage, 9 ¾c; 26-28 gage, 10 ¼c.		

Galvanized

	Per lb.
No. 14	5.60c
No. 16	5.75c
Nos. 18 and 20	6.00c
Nos. 22 and 24	6.15c
No. 26	6.30c
No. 27	6.45c
No. 28	6.50c
No. 30	7.00c
No. 28, 36 in. wide, 20c. higher.	

Corrugated Roofing, Galvanized

2 ½ in. corrugations, 10c. per 100 lb. over flat sheets.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general headings of "Iron and Steel Markets" and "Metal Markets."

Steel Wire

	Per lb.
BASE PRICE* ON NO. 9 GAGE AND COARSER	
Bright basic	5.25c
Annealed soft	5.25c
Galvanized annealed	6.00c
Coppered basic	6.00c
Tinned soft bessemer	7.25c

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

	Per lb.
BASE PRICE	
High Brass Sheet	23c to 24 ¾c
High Brass Wire	23c to 24 ¾c
Brass Rod	21 ½c to 23c
Brass Tube	33 ¾c to 38c

Copper Sheets

Sheet copper, hot rolled, 16 oz., 32 ½c. to 35c. per lb. base.
Cold rolled, 14 oz. and heavier, 1c. per lb. advance over hot rolled.

Tin Plates

	Bright Tin	Grade "A"	Charcoal	Coke—14x20	Primes	Wasters
	Grade "AAA"	Charcoal	14x20	14x20		
IC	\$11.30	\$10.05			80 lb. ... \$8.30	\$8.05
IX	13.50	12.00			90 lb. ... 8.40	8.15
IXX	15.25	13.75			100 lb. ... 8.55	8.30
IXXX	17.00	15.50			IC ... 8.80	8.55
IXXXX	18.75	17.25			IX ... 10.00	9.75
					IXX ... 10.95	10.70
					IXXX ... 11.90	11.65
					IXXXX ... 12.85	12.60

Terne Plates

	Per lb.
8-Lb. Coating 14x20	
100 lb.	\$8.50
IC	8.65
IX	9.65
Fire door stock	11.50

Tin

	Per lb.
Straits pig	74c to 75c
Bar	80c to 85c
American pig, 99 per cent.	70c to 72c

Copper

	Per lb.
Lake Ingot	26c
Electrolytic	24c to 25c
Casting	24c to 25c

Spelter and Sheet Zinc

Western spelter ... 9c to 10c
Sheet zinc, No. 9 base, casks ... 12c; open 13c

Lead and Solder*

	Per lb.
American pig lead	6c to 6 ½c
Bar lead	7 ½c to 8 ½c
Solder ½ & ½ guaranteed	45c
No. 1 solder	40c
Refined solder	34c

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

	Per lb.
Best grade, per lb.	90c
Commercial grade, per lb.	50c

Antimony

	Per lb.
Asiatic	10c

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb. ... 37c to 39c

Old Metals

The market is firm. Dealers' buying prices are nominally as follows:

	Cents Per lb.
Copper, heavy and crucible	18.50
Copper, heavy and wire	17.50
Copper, light and bottoms	14.50
Brass, heavy	11.00
Brass, light	8.25
Heavy machine composition	17.50
No. 1 yellow rod brass turnings	9.50
No. 1 red brass or composition turnings	13.25
Lead, heavy	4.75
Lead, tea	3.75
Zinc	4.50

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